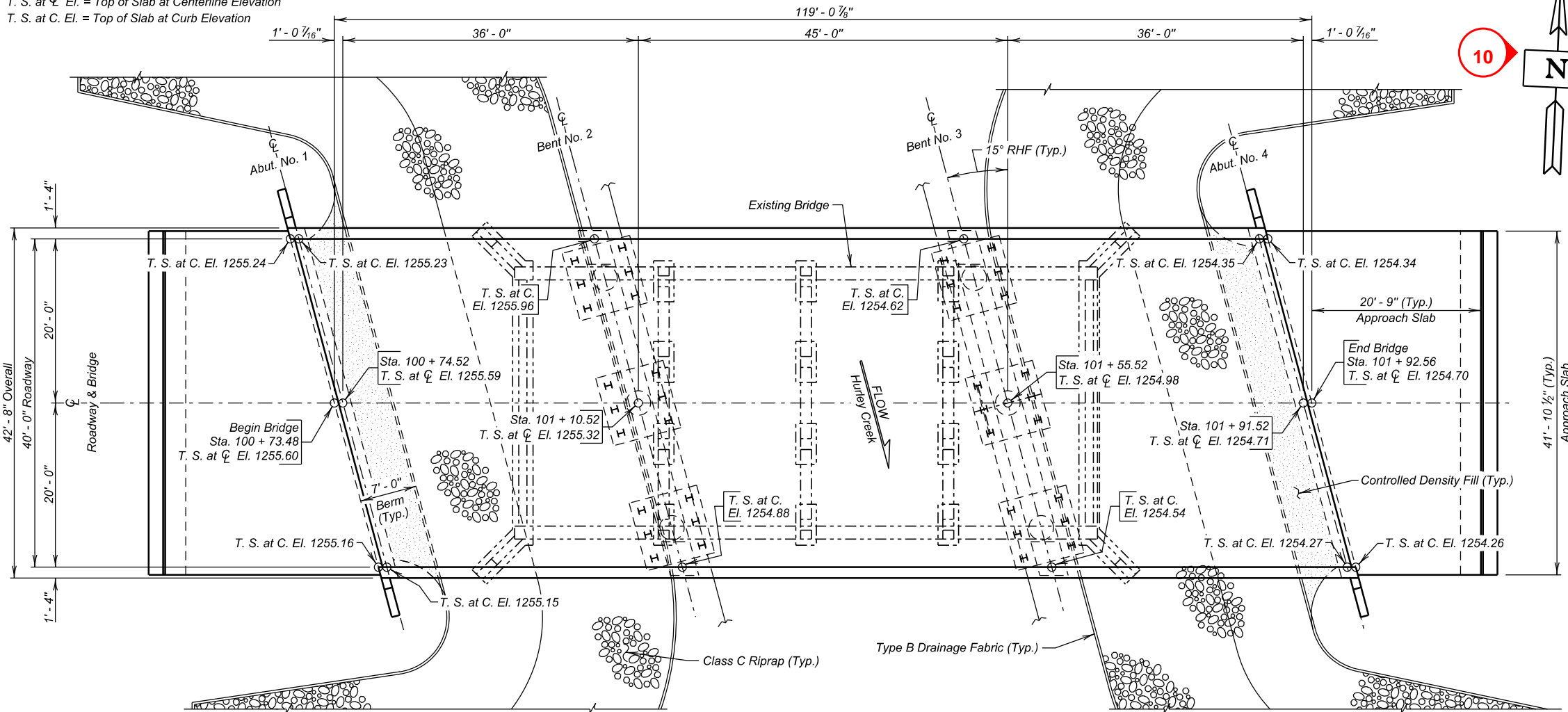


The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

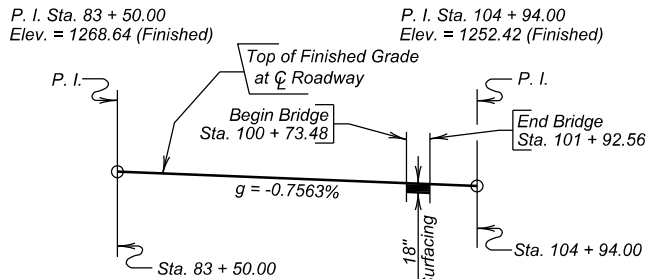
NOTES:

T. S. at  $\nabla$  El. = Top of Slab at Centerline Elevation

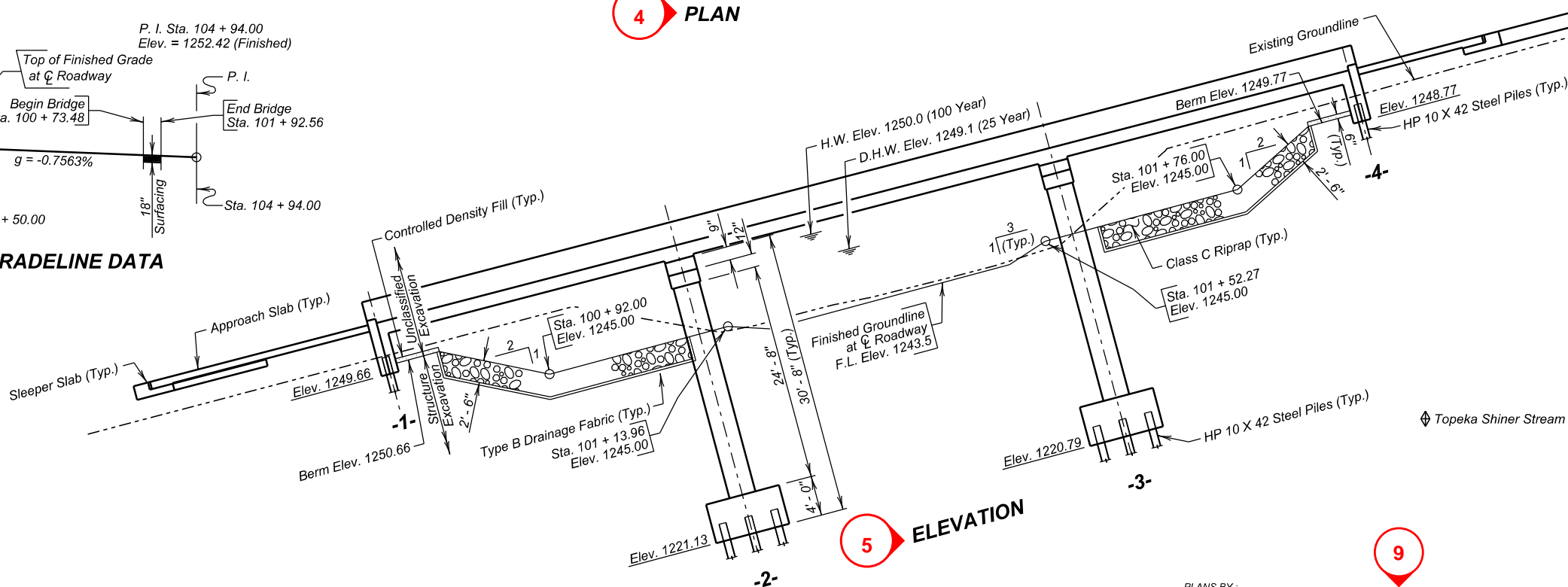
T. S. at C. El. = Top of Slab at Curb Elevation



4 PLAN



6 GRADELINE DATA



5 ELEVATION

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.			

## HYDRAULIC DATA

$Q_d$	1294 cfs
$A_d$	301 sq. ft.
$V_d$	4.3 fps
$Q_F$	1910 cfs
$Q_{100}$	4223 cfs
$Q_{OT}$	$> Q_{100}$ cfs
$V_{max}$	6.7 fps

$Q_d$  = Design discharge for the proposed bridge based on 25 year frequency. El. 1249.1.

$Q_{OT}$  = Overtopping discharge and frequency  $> Q_{100}$  yr. recurrence interval. El. 1252.6 @ Sta. 106 + 50.00.

$Q_F$  = Designated peak discharge for the basin approaching proposed project based on 25 year frequency.

$Q_{100}$  = Computed discharge for the basin approaching proposed project based on 100 year frequency. El. 1250.0.

$V_{max}$  = Maximum computed outlet velocity for the proposed bridge based on a 100 year frequency.

## -X020- INDEX OF BRIDGE SHEETS -

- Sheet No. 1 - General Drawing
- Sheet No. 2 - Estimate of Structure Quantities and Notes
- Sheet No. 3 - Notes (Continued)
- Sheet No. 4 - Subsurface Investigation and Piling Layout
- Sheet No. 5 - Piling Layout Details
- Sheet No. 6 - Abutment No. 1 Details
- Sheet No. 7 - Abutment No. 4 Details
- Sheet No. 8 - Bent Details
- Sheet No. 9 - Superstructure Details (A)
- Sheet No. 10 - Superstructure Details (B)
- Sheet No. 11 - End Block and Barrier Curb Details
- Sheet No. 12 - Details of Bridge End Backfill (A)
- Sheet No. 13 - Details of Bridge End Backfill (B)
- Sheet No. 14 - Details of Approach Slab Adjacent to Bridge
- Sheet No. 15 - Approach Slab Joint Details
- Sheet No. 16 - Riprap Details
- Sheet No. 17 - As - Built Elevation Survey
- Sheet No. 18 - Details of Standard Plate No's. 430.50 and 460.02
- Sheet No. 19 - Details of Standard Plate No's. 460.05 and 510.40
- Sheet No. 20 - Details of Standard Plate No's. 620.18 and 630.92

## REQUIRED LIST

- ① Title Block
- ② Project Block
- ③ Index of Sheets
- ④ Plan View
- ⑤ Elevation View
- ⑥ Horiz. & Vert. Curve Data
- ⑦ Hydraulic Data
- ⑧ Survey Datum Box
- ⑨ Design Firm or Office
- ⑩ North Arrow

## GENERAL DRAWING

FOR

119' - 0 7/8" CONT. CONCRETE BRIDGE

OVER HURLEY CREEK 15° RHF SKEW  
STA. 100 + 73.48 TO 101 + 92.56 SEC. 1/36-T97/98N-R53W  
STR. NO. 63-179-170 NH-PH 0018(180)420  
PCN 036A HL-93

TURNER COUNTY  
S. D. DEPT. OF TRANSPORTATION

MARCH 2017

1 OF 20

-X020-

DESIGNED BY CL	CK. DES. BY PW	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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PLANS BY:  
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

3

ESTIMATE OF STRUCTURE QUANTITIES

DESCRIPTION	QUANTITY	UNIT	REMARKS
Bridge Elevation Survey	Lump Sum	LS	
Concrete Penetrating Sealer	530.0	SqYd	See Special Provision
Incidental Work, Structure	Lump Sum	LS	
Membrane Sealant Expansion Joint	83.8	Ft	
Structure Excavation, Bridge	91.6	CuYd	
Bridge End Embankment	638	CuYd	
Granular Bridge End Backfill	124.7	CuYd	
Approach Slab Underdrain Excavation	3.3	CuYd	
Precast Concrete Headwall for Drain	4	Each	
Class A45 Concrete, Bridge Deck	286.8	CuYd	
Class A45 Concrete, Bridge	151.4	CuYd	
Concrete Approach Slab for Bridge	197.8	SqYd	
Concrete Approach Sleeper Slab for Bridge	41.9	SqYd	
Controlled Density Fill	11.5	CuYd	
Reinforcing Steel	18,234	Lb	
Epoxy Coated Reinforcing Steel	74,786	Lb	
Extract Pile	16	Each	
Preboring Pile	120	Ft	
HP 10x42 Steel Test Pile, Furnish and Drive	510	Ft	
HP 10x42 Steel Bearing Pile, Furnish and Drive	5,090	Ft	
4" Underdrain Pipe	271	Ft	
Porous Backfill	34.1	Ton	
Class C Riprap	1,141.2	Ton	
Type B Drainage Fabric	1,237	SqYd	

4

SPECIFICATIONS FOR BRIDGE

- Design Specifications: AASHTO LRFD Bridge Design Specifications, 2014 Edition with 2015 and 2016 interims.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and required provisions, supplemental specifications, and special provisions as included in the proposal.

BRIDGE DESIGN LOADING

- AASHTO HL-93.
- Dead Load includes 22 psf for future wearing surface on the roadway.

DESIGN MATERIAL STRENGTHS

Concrete  
Reinforcing Steel  
Piling (ASTM A572 Grade 50)

f<sub>c</sub> = 4,500 psi  
f<sub>y</sub> = 60,000 psi  
f<sub>y</sub> = 50,000 psi

GENERAL CONSTRUCTION

- All mild reinforcing steel shall conform to ASTM A615, Grade 60.
- All exposed concrete corners and edges shall be chamfered 3/4" unless noted otherwise.
- Use 2" clear cover on all reinforcing steel except as shown.
- Contractor shall imprint on the structure the date of new construction as specified and detailed on Standard Plate No. 460.02.
- Barrier Curbs and End blocks shall be built normal to the grade.
- Request for construction joints or re-steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of re-steel.
- The elevation of the bridge deck is 18" above subgrade elevation.

INCIDENTAL WORK, STRUCTURE

- In place centerline Sta. 100+96.23 to centerline Sta. 101+66.69 is a 71.5' 4 span continuous concrete bridge with a 30'-0" clear roadway. The superstructure consists of a reinforced concrete slab with concrete pigeon hole railing faced with steel W-beam continuous across the bridge. The deck has been overlaid with 2 inches of asphalt. The substructure consists of 4 column reinforced concrete bents and reinforced concrete vertical abutments, all of which are supported on timber piling.
- Break down and remove the existing bridge, and approach/sleeper slabs if applicable, to 1 foot below finished groundline, or as required to construct the new structure in accordance with Section 110 of the Specifications. All portions of the existing bridge shall be removed and disposed of by the Contractor on a site obtained by the Contractor and approved by the Engineer in accordance with the Environmental Commitments found in Section A
- During demolition of the structure, efforts shall be taken to prevent material from falling into the creek. Under no circumstances is asphalt allowed to fall into the creek.
- The foregoing is a general description of the in-place bridge and should not be construed to be complete in all details. Before preparing the bid it shall be the responsibility of the Contractor to make a visual inspection of the structure to verify the extent of the work and materials involved. If desired by the Contractor, a copy of the original construction plans may be obtained through the Office of Bridge Design.
- It is anticipated that at least sixteen (16) existing timber piles will interfere with piling for this new structure. Any existing timber pile that interferes with piling for the new structure shall be extracted. Payment for the extracting piling shall be contract unit price per each for Extract Pile and shall be full compensation for extracting piling including materials, labor, and equipment necessary or incidental to the satisfactory completion of this work.

DESIGN MIX OF CONCRETE

- All structural concrete shall be Class A45 unless otherwise indicated.
- Type II cement is required.

ABUTMENTS

- Pre-boring piling at each abutment is required to whichever is greater, ten feet or to natural ground
- The HP 10x42 Piling were designed using a factored bearing resistance of 77 tons per pile. Piling shall develop a field verified nominal bearing resistance of 192 tons per pile.
- The contractor shall have sufficient pile splice material on hand before pile driving is started. See Standard Plate No. 510.40.
- Piles shall not be driven out of position by more than three inches in the direction normal to the abutment centerline. A pile-driving template shall be used to insure this accuracy.
- One test pile shall be driven at each abutment and will become part of the pile group.
- Each finished abutment shall include a Bridge Survey Marker. See Standard Plate No. 460.05.

PILE DRIVING

- A drivability analysis was performed using the wave equation analysis program (GRLWEAP). The following pile hammers were evaluated and found to produce acceptable driving stresses:

SPI D-30    APE D30-32    APE D30-52
- Pile hammers not listed will require evaluation and approval prior to use from the Geotechnical Engineering Activity.

REQUIRED LIST	
1	Title Block
2	Project Block
3	Estimate of Quantities
4	Notes

1

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES  
FOR  
119' - 0 7/8" CONT. CONCRETE BRIDGE

STR. NO. 63-179-170  
MARCH 2017



BENTS

- 1. The HP 10x42 Piling were designed using a factored bearing resistance of 77 tons per pile. Piling shall develop a field verified nominal bearing resistance of 192 tons per pile.
- 2. One test pile shall be driven at each bent and will become part of the pile group.
- 3. The contractor shall have sufficient pile splice material on hand before pile driving is started. See Plate No. 510.40
- 4. Spiral reinforcement may be fabricated from cold drawn wire conforming to ASTM A1064 or hot rolled plain or deformed bars conforming to the strength requirements of ASTM A615, Grade 60.
- 5. It is anticipated that cofferdams will be necessary. Cofferdams shall be designed and constructed in accordance with Section 423 of the Specifications.

SUPERSTRUCTURE

- 1. Preplanned construction joints may be used in accordance with Section 460.3 of the Specifications. Contact the Office of Bridge Design for joint configuration and allowable location. Emergency slab construction joints shall be as shown with the superstructure details. If an emergency slab joint is used, contact the Office of Bridge Design before proceeding with deck pour.
- 2. The deck-finishing machine shall be adjusted and operated in such a manner that the roller screed or screeds are parallel with the centerline of the bridge and the finish machine is parallel to the skew of the bridge. Concrete placement in front of the finish machine shall be kept parallel to the machine.
- 3. Barrier curbs shall be poured after all the slab has been poured. Superstructure falsework shall not be removed until bridge deck concrete, including barrier curbs, has attained a strength of 2400 psi.
- 4. The bridge deck must be placed and finished continuously at a minimum rate of 49 ft. of deck per hour measured along centerline roadway. If concrete cannot be placed and finished at this rate, the Engineer shall order a header installed and operations stopped. Notify the Bridge Construction Engineer if deck pour operations are stopped. Operations may resume only when the Engineer is satisfied that a minimum rate of 49 ft. of deck per hour can be achieved and the concrete in the previous pour has attained a minimum compressive strength of 2000 psi.

- 5. Snap ties, if used in barrier curb formwork, shall be epoxy coated. The epoxy coating shall be inert in concrete and compatible with the coating applied to the new epoxy coated reinforcing steel.

CLASS A45 CONCRETE, BRIDGE DECK

- 1. Concrete used in the bridge deck slab and barrier curbs shall be in accordance with the requirements for bridge deck concrete as specified in Section 460.3A of the Specifications.
- 2. See Special Provision for Concrete Penetrating Sealer.

CLASS B COMMERCIAL TEXTURE FINISH

- 1. A Class B commercial texture finish shall be applied to the following areas:
  - a) **Barrier Rail:** all exposed surfaces (front, top and back).
  - b) **Slab:** edge of slab.
- 2. The Class B commercial texture finish shall be applied in accordance with Section 460.3 L.1.c of the Specifications.
- 3. Where the Class B commercial texture finish is to be applied, concrete curing shall be accomplished with cotton or burlap mats and polyethylene sheeting. Curing shall continue for not less than seven days after placing concrete before the commercial texture finish is applied. The commercial texture finish shall be applied in accordance with the manufacturer's recommendations. The commercial texture finish itself does not require a specific cure except for drying.

AS - BUILT ELEVATION SURVEY

The Contractor shall be responsible for recording the As-built deck elevations and bridge survey marker elevations at the locations shown in the Table of As-Built Elevations shown in the plans. All costs associated with obtaining the elevations including all equipment, labor and any incidentals required shall be incidental to the contract lump sum price for Bridge Elevation Survey.

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.			

APPROACH SLABS

- 1. Sleeper slab riser shall be cast with the approach slab or cast after the approach slab is placed. Care shall be taken to ensure the correct grade is maintained across the joint.
- 2. The use of an approved finishing machine will be required during placement of Class A45 Concrete for the approach slabs. Concrete placement in front of the machine shall be kept parallel to the screed.
- 3. The concrete in the approach slab shall be tined normal to centerline roadway.
- 4. Concrete Approach Sleeper Slab for Bridge, whether cast-in-place or precast, will be paid for at the contract unit price per square yard. This payment shall be full compensation for all excavation, furnishing, hauling, and placing all materials including concrete and reinforcing steel; for disposal of all excavated material and surplus materials; and for labor, tools, equipment and any incidentals necessary to complete this item of work.
- 5. Concrete Approach Slab for Bridge will be paid for at the contract unit price per square yard. This payment shall be full compensation for all excavation, furnishing, hauling and placing all materials including concrete, asphalt paint or 6 mil polyethylene sheeting, elastic joint sealer and reinforcing steel; for disposal of all excavated material and surplus materials and for labor, tools, equipment and any incidentals necessary to complete this item of work.

REQUIRED LIST

- 1 Title Block
- 2 Project Block
- 3 Notes

NOTES (CONTINUED)

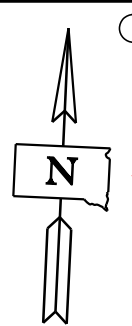
FOR

119' - 0 7/8" CONT. CONCRETE BRIDGE

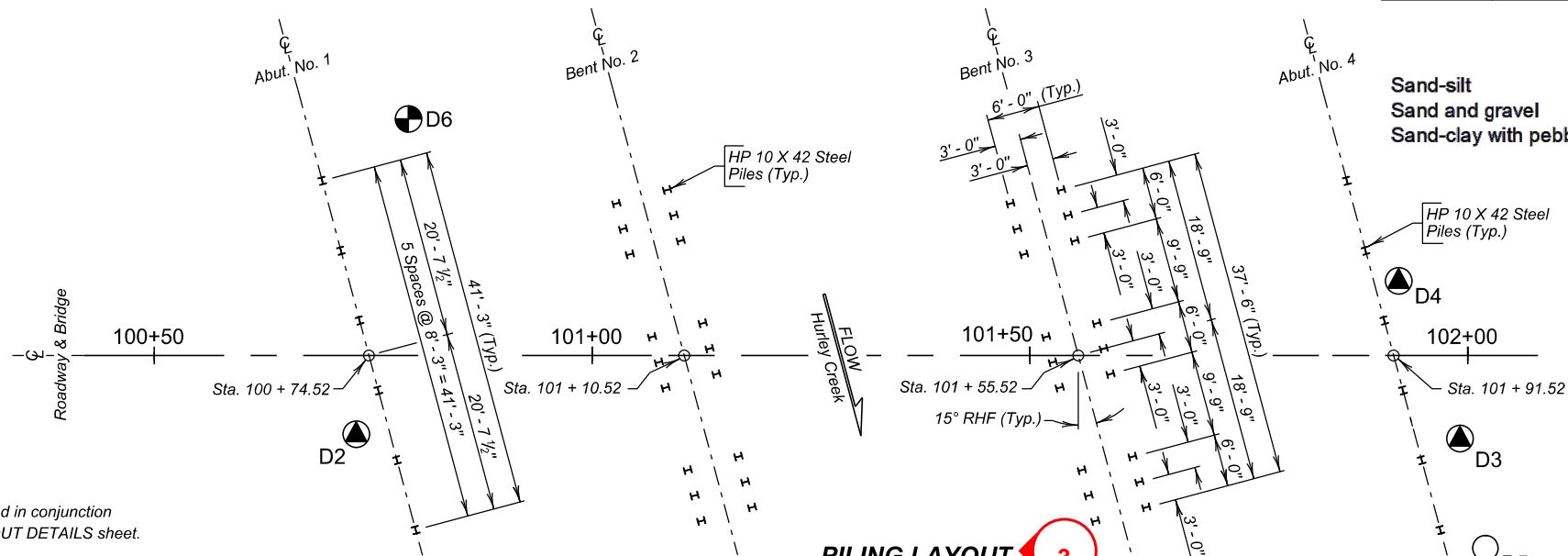
STR. NO. 63-179-170

MARCH 2017

DESIGNED BY CL	CK. DES. BY PW	DRAFTED BY BT	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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D1



NOTE :  
This sheet is to be used in conjunction  
with the PILING LAYOUT DETAILS sheet.

Hole Number	D1
Station	100+23
Depth	20.5 ft
Soil Color	Gray
Classification	Grvl Sand
Strength (Qu)	No Test
Dry Density	113.0 pcf
Wet Density	126.8 pcf
Moisture	12.2 %
Pass No. 10	77.5 %
Pass No. 40	9.1 %
Pass No. 200	3.9 %
Sand Content	73.6 %
Silt Content	1.6 %
Clay Content	2.3 %

Hole Number	D1
Station	100+23
Depth	39.8 ft
Soil Color	Gray
Classification	Sand-Clay
Strength (Qu)	5,360 psf
Dry Density	108.6 pcf
Wet Density	129.4 pcf
Moisture	19.2 %
Pass No. 10	94.1 %
Pass No. 40	85.8 %
Pass No. 200	65.1 %
Sand Content	29.0 %
Silt Content	28.4 %
Clay Content	36.7 %

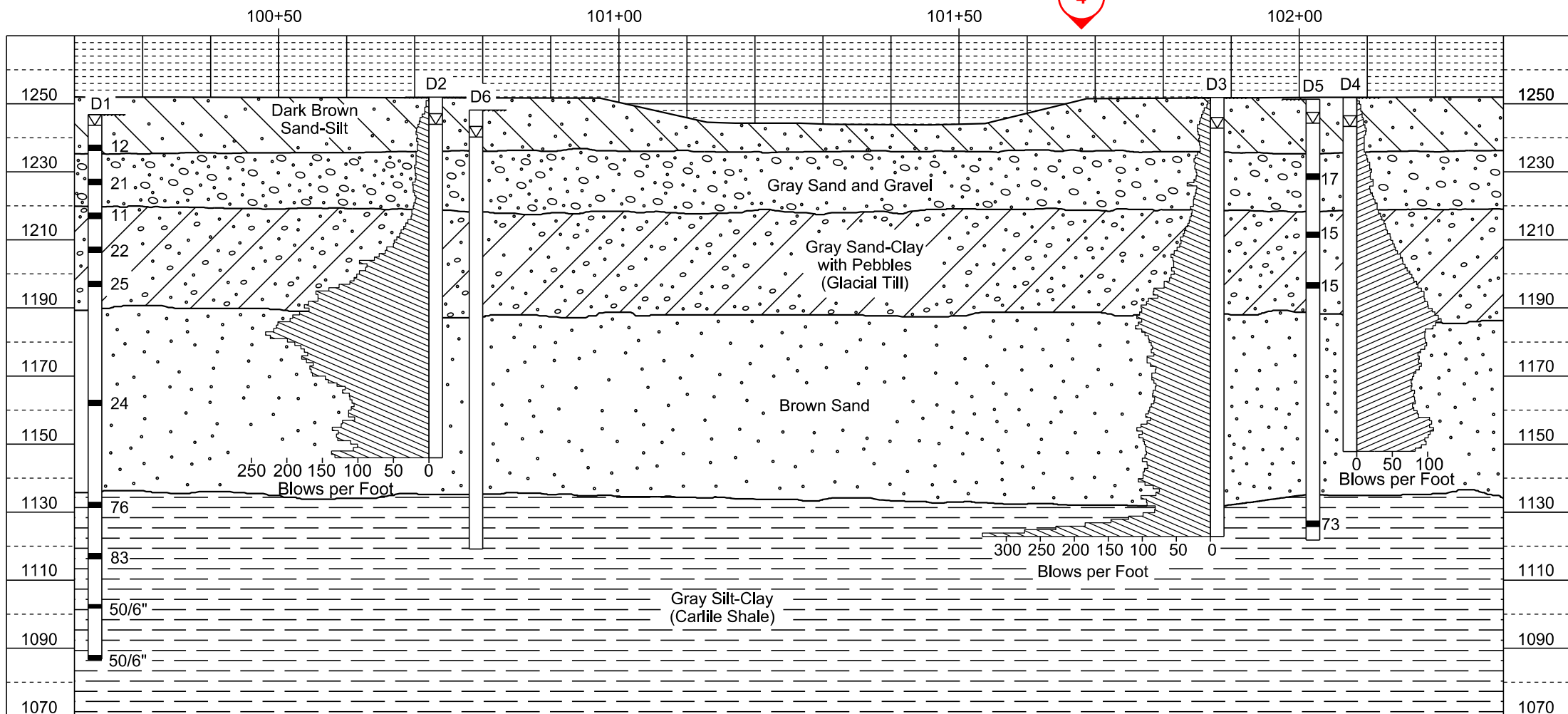
Hole Number	D1
Station	100+23
Depth	85.2 ft
Soil Color	Brown
Classification	Sand
Strength (Qu)	No Test
Dry Density	107.9 pcf
Wet Density	124.4 pcf
Moisture	15.3 %
Pass No. 10	99.9 %
Pass No. 40	36.2 %
Pass No. 200	2.2 %
Sand Content	97.7 %
Silt Content	1.2 %
Clay Content	1.0 %

Hole Number	D1
Station	100+23
Depth	145 ft
Soil Color	Gray
Classification	Clay
Strength (Qu)	16,850 psf
Dry Density	111.5 pcf
Wet Density	132.3 pcf
Moisture	18.6 %
Pass No. 10	95.4 %
Pass No. 40	95.2 %
Pass No. 200	88.1 %
Sand Content	0.7 %
Silt Content	23.1 %
Clay Content	71.6 %

Hole Number	D5
Station	102+02
Depth	125.5 ft
Soil Color	Gray
Classification	Clay
Strength (Qu)	13,420 psf
Dry Density	117.5 pcf
Wet Density	138.2 pcf
Moisture	17.6 %
Pass No. 10	94.4 %
Pass No. 40	91.2 %
Pass No. 200	88.8 %
Sand Content	5.5 %
Silt Content	31.3 %
Clay Content	57.6 %

### REQUIRED LIST

- 1 Title Block
- 2 Project Block
- 3 Plan View (Piling Layout)
- 4 Subsurface Profile
- 5 North Arrow



### GROUND WATER ELEVATIONS

as of APRIL/MAY 2015

D1	1244.8
D2	1240.0
D3	1242.9
D4	1243.3
D5	1244.3
D6	1240.2

### MEASURED SKIN FRICTION

	ELEV.	PSF
D2	1146.0	267
D3	1122.9	250
D4	1147.8	220

### SUBSURFACE INVESTIGATION AND PILING LAYOUT

FOR

119' - 0 7/8" CONT. CONCRETE BRIDGE

OVER HURLEY CREEK 15° RHF SKEW  
STA. 100 + 73.48 TO 101 + 92.56 SEC. 1/36-T97/98N-R53W  
STR. NO. 63-179-170 NH-PH 0018(180)420  
HL-93

TURNER COUNTY  
S. D. DEPT. OF TRANSPORTATION  
MARCH 2017

4 OF 20

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### COFFERDAM SOIL PARAMETERS

	Friction Angle (φ)	Cohesion	Wet Unit Weight (γ <sub>w</sub> )
Sand-silt	30°	0 psf	126 pcf
Sand and gravel	34°	0 psf	128 pcf
Sand-clay with pebbles	27°	650 psf	130 pcf

Carlile Shale is a marine shale with a textural classification that varies from silt-clay to sandyclay. Color varies from dark-gray to black. The formation contains large fossiliferous concretions, interbedded layers of buff colored sandstone and sandy calcareous marl.

The Geotechnical Engineering Activity has all of the boring logs and laboratory test results available for review at the Central Office in Pierre.

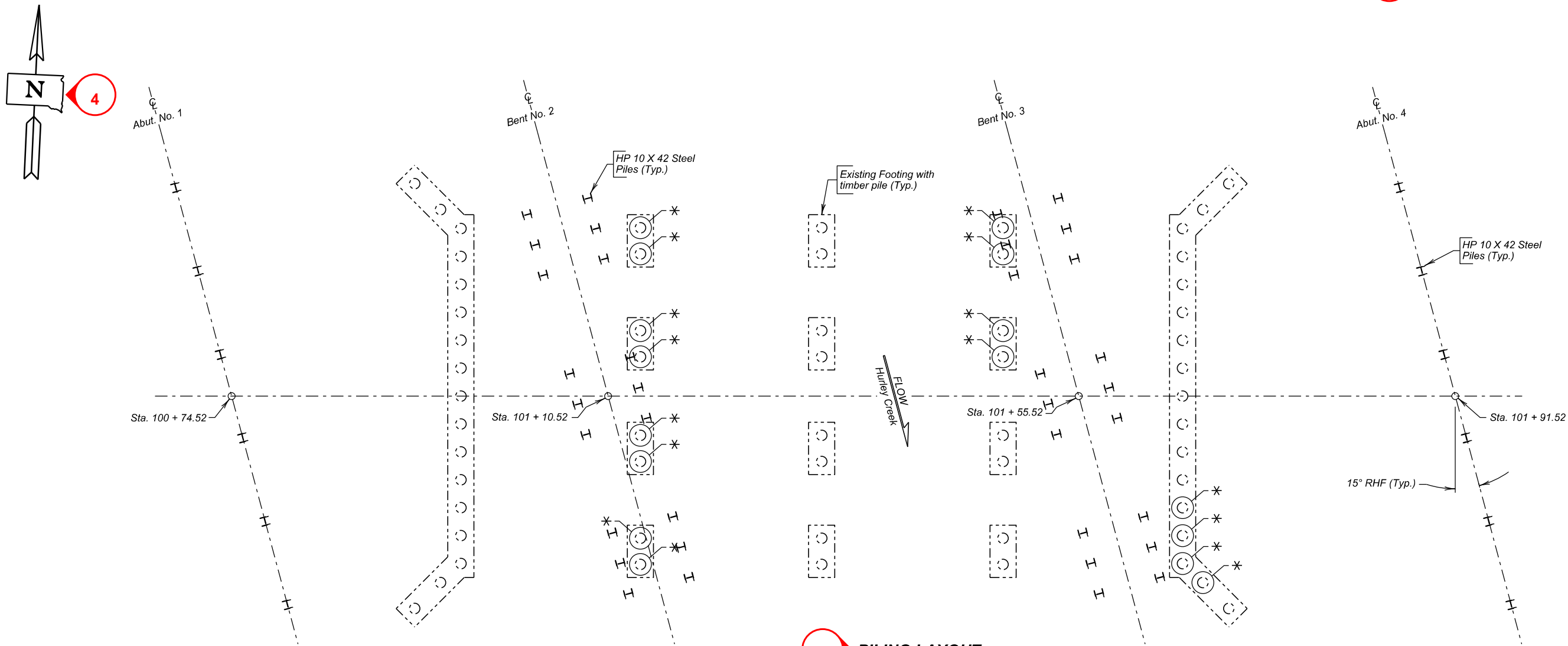
### LEGEND

- Penetration Test
- Drive Test
- ▽ Water
- Auger Test
- Sample Zone

Drive tests are conducted by dropping a 490 pound hammer 30 inches to drive a 2 7/8 inch drill stem to measure the resistance to penetration of the soil.

Penetration test holes are drilled with a 6 5/8 inch diameter hollow stem auger. Penetration tests are conducted by dropping a 140 pound hammer 30 inches to obtain 2 inch nominal diameter samples and to measure the resistance to penetration of the soil.

All auger holes are drilled with a 4 1/2 inch diameter continuous flight auger.



3

PILING LAYOUT

NOTE :  
This sheet is to be used in conjunction with the  
SUBSURFACE INVESTIGATION AND PILING LAYOUT sheet.

NOTE:  
\* Existing timber pile to be extracted.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Extract Pile	Each	16

REQUIRED LIST	
1 Title Block	4 North Arrow
2 Project Block	
3 Plan View (Piling Layout)	

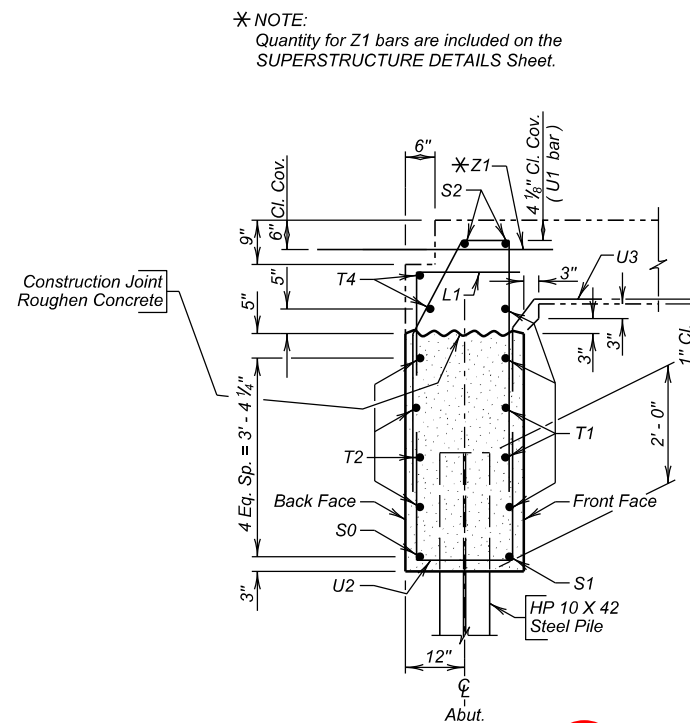
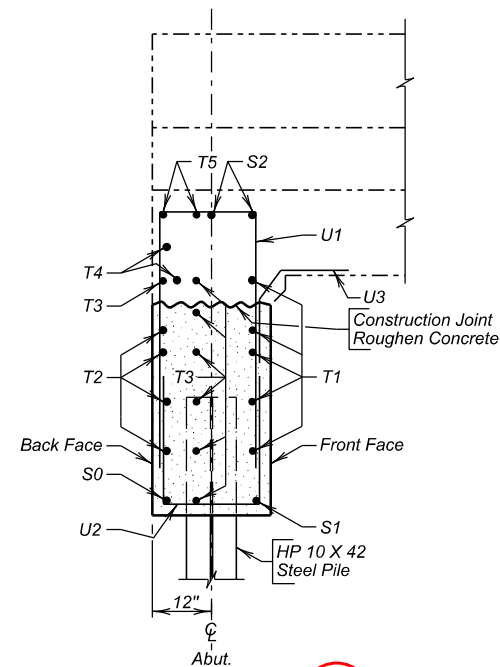
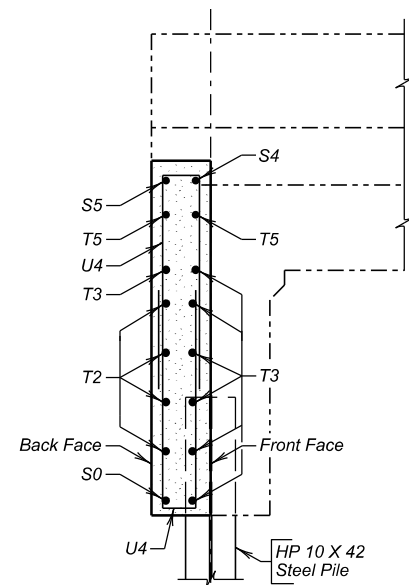
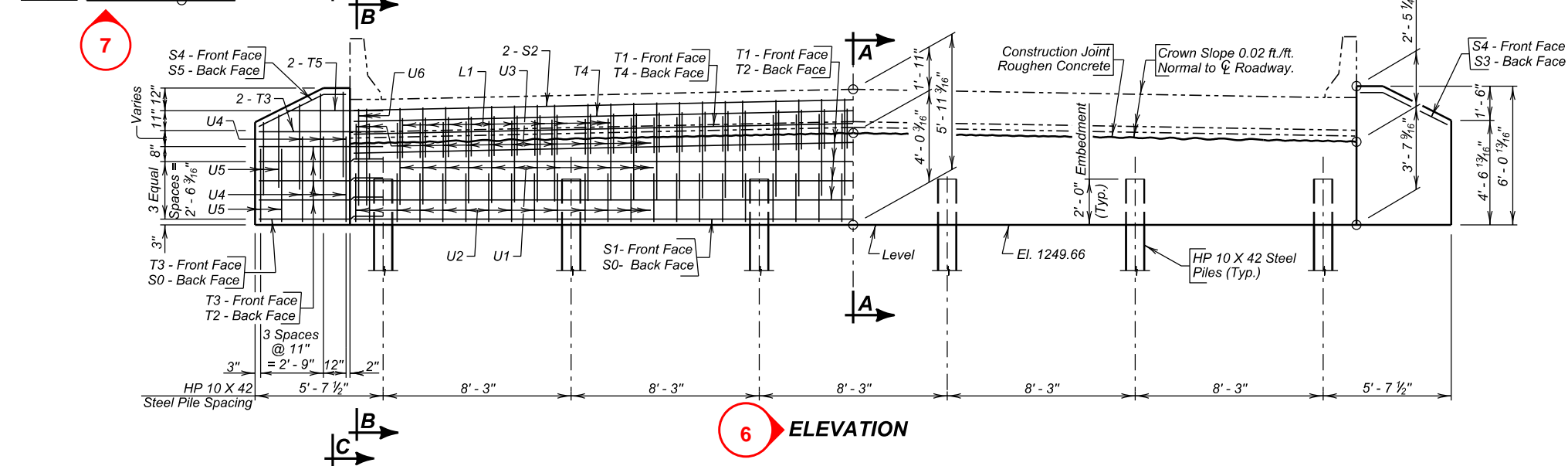
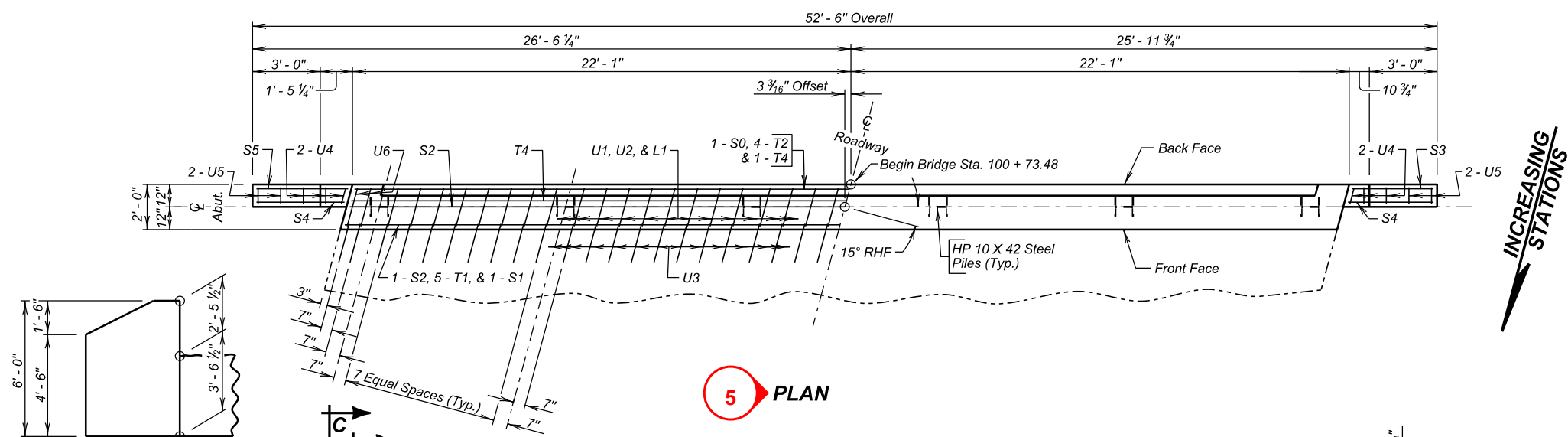
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PILING LAYOUT DETAILS

FOR  
119' - 0 7/8" CONT. CONCRETE BRIDGE  
OVER HURLEY CREEK 15° RHF SKEW  
STA. 100 + 73.48 TO 101 + 92.56 SEC. 1/36-T97/98N-R53W  
STR. NO. 63-179-170 NH-PH 0018(180)420  
HL-93

TURNER COUNTY  
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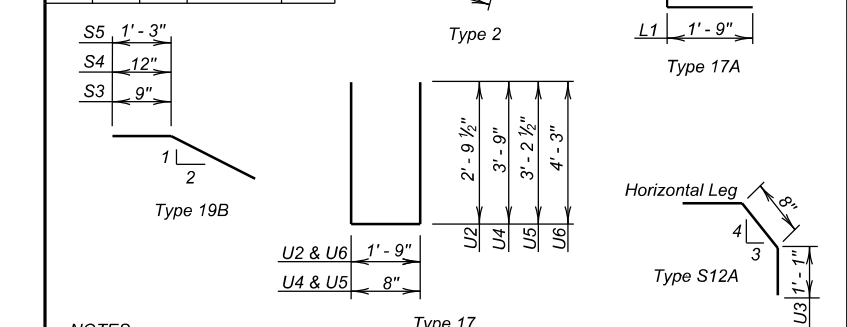




STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.			

**REINFORCING SCHEDULE**  
(For One Abutment)

	Mk.	No.	Size	Length	Type	Bending Details	
Δ	L1	40	4	3' - 6"	17A		
	S0	1	9	52'- 2"	Str.		
	S1	1	9	43'- 10"	Str.		
≠ Δ	S2	2	9	43'- 10"	Str.		
	S3	1	9	3' - 11"	19B		
	S4	2	9	4' - 1"	19B		
	S5	1	9	4' - 4"	19B		
≠	T1	5	5	47' - 4"	2		
	T2	4	5	52'- 2"	Str.		
	T3	14	5	5' - 6"	Str.		
≠ Δ	T4	2	5	43'- 10"	Str.		
Δ	T5	4	5	4' - 9"	Str.		
Δ	U1	40	6	9' - 6"	14B		
	U2	44	4	6' - 3"	17		
Δ	U3	44	4	2' - 10"	S12A		
	U4	12	6	8' - 2"	17		
	U5	8	4	7' - 1"	17		
Δ	U6	4	6	10' - 3"	17		



NOTES:  
*All dimensions are out to out of bars.*  
 $\Delta$  Bars to be epoxy coated.  
 $\neq$  Bend in field as necessary to fit.

### ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge	Cu. Yd.	14.2
Reinforcing Steel	Lb.	1149
Epoxy Coated Reinforcing Steel	Lb.	1366
Structure Excavation, Bridge	Cu. Yd.	10.0
HP 10 X 42 Steel Test Pile, Furnish and Drive	Ft.	1 @ 140' = 140'
HP 10 X 42 Steel Bearing Pile, Furnish and Drive	Ft.	5 @ 135' = 675'
Preboring Pile	Ft.	6 @ 10' = 60'

## REQUIRED LIST

- |                        |                        |
|------------------------|------------------------|
| ① Title Block          | ⑤ Plan View            |
| ② Project Block        | ⑥ Elevation View       |
| ③ Reinforcing Schedule | ⑦ Sections as Required |
| ④ Estimated Quantities |                        |

### ABUTMENT NO. 1 DETAILS

FOR

119' - 0  $\frac{7}{8}$ " CONT. CONCRETE BRIDGE

OVER HURLEY CREEK 15° RHF SKEW  
STA. 100 + 73.48 TO 101 + 92.56 SEC. 1/36-T97/98N-R53W  
STR. NO. 63-179-170 NH-PH 0018(180)420

TURNER COUNTY

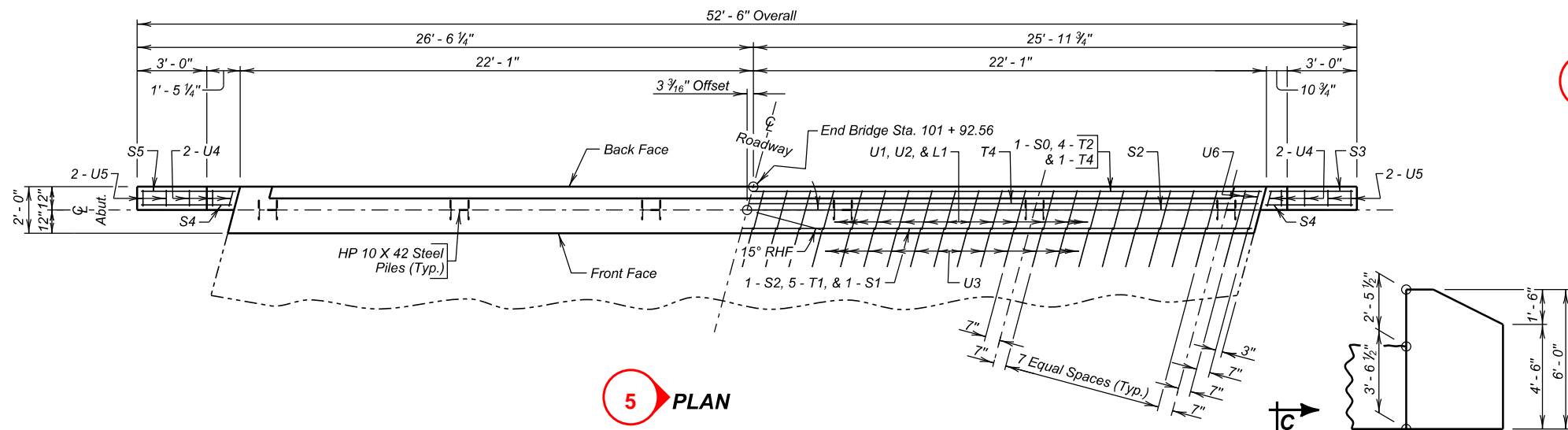
S. D. DEPT. OF TRANSPORTATION

MARCH 2017

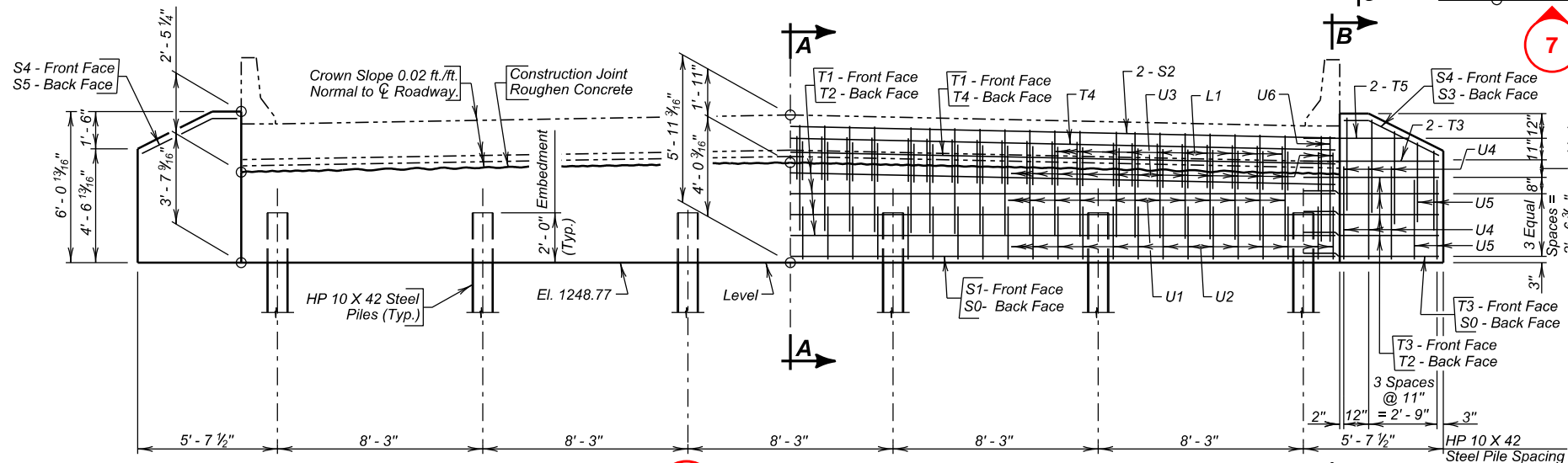
6 OF 20

DESIGNED BY CL	CK. DES. BY PW	DRAFTED BY BT	 BRIDGE ENGINEER
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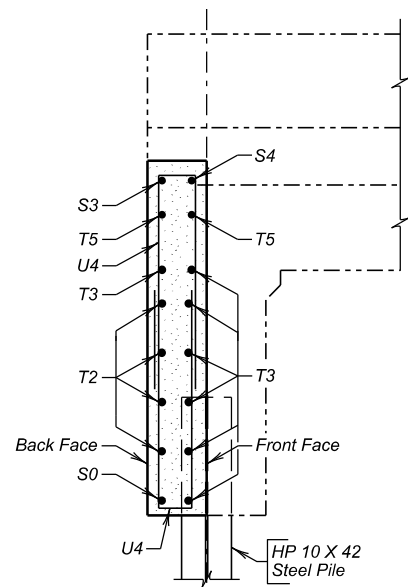
INCREASING STATIONS



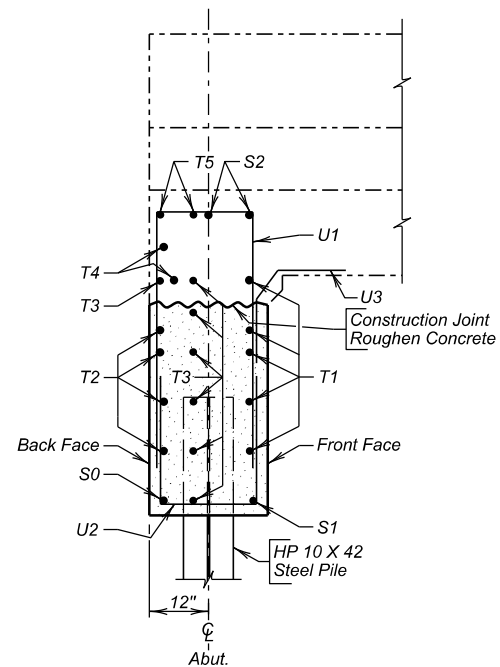
5 PLAN



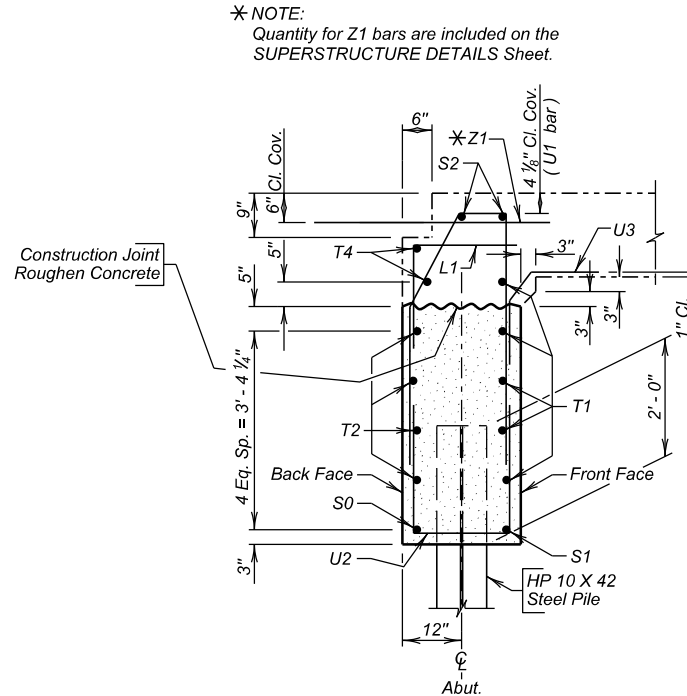
6 ELEVATION



SEC. C - C 7



SEC. B - B 7



SEC. A - A 7

\* NOTE:  
Quantity for Z1 bars are included on the  
SUPERSTRUCTURE DETAILS Sheet.

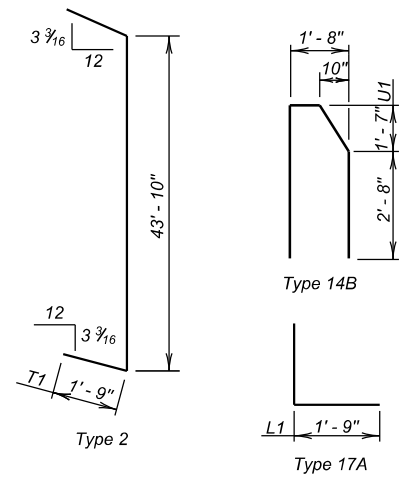
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.			

### REINFORCING SCHEDULE (For One Abutment)

	Mk.	No.	Size	Length	Type
Δ	L1	40	4	3' - 6"	17A
	S0	1	9	52' - 2"	Str.
	S1	1	9	43' - 10"	Str.
± Δ	S2	2	9	43' - 10"	Str.
	S3	1	9	3' - 11"	19B
	S4	2	9	4' - 1"	19B
	S5	1	9	4' - 4"	19B
	±	T1	5	5	47' - 4"
T2		4	5	52' - 2"	Str.
T3		14	5	5' - 6"	Str.
± Δ	T4	2	5	43' - 10"	Str.
Δ	T5	4	5	4' - 9"	Str.
Δ	U1	40	6	9' - 6"	14B
	U2	44	4	6' - 3"	17
Δ	U3	44	4	2' - 10"	S12A
	U4	12	6	8' - 2"	17
	U5	8	4	7' - 1"	17
Δ	U6	4	6	10' - 3"	17

Bending Details

3  $\frac{3}{16}$  12 43' - 10" 1'-8" 10" U1 1'-7" 2' - 8" Type 14B 12 3  $\frac{3}{16}$  T1 1'-9"



NOTES:  
All dimensions are out to out of bars.  
Δ Bars to be epoxy coated.  
± Bend in field as necessary to fit.

### ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge	Cu. Yd.	14.2
Reinforcing Steel	Lb.	1149
Epoxy Coated Reinforcing Steel	Lb.	1366
Structure Excavation, Bridge	Cu. Yd.	10.0
HP 10 X 42 Steel Test Pile, Furnish and Drive	Ft.	1 @ 140' = 140'
HP 10 X 42 Steel Bearing Pile, Furnish and Drive	Ft.	5 @ 135' = 675'
Preboring Pile	Ft.	6 @ 10' = 60'

### REQUIRED LIST

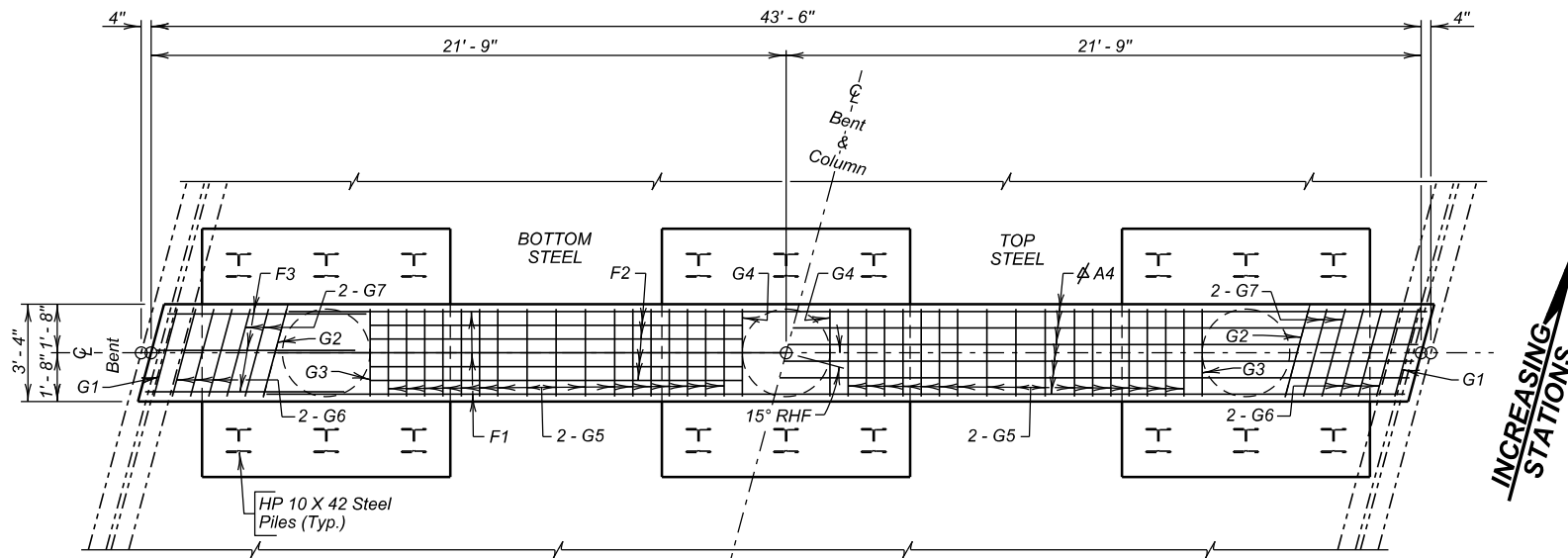
- ① Title Block
- ② Project Block
- ③ Reinforcing Schedule
- ④ Estimated Quantities
- ⑤ Plan View
- ⑥ Elevation View
- ⑦ Sections as Required

### 1 ABUTMENT NO. 4 DETAILS FOR

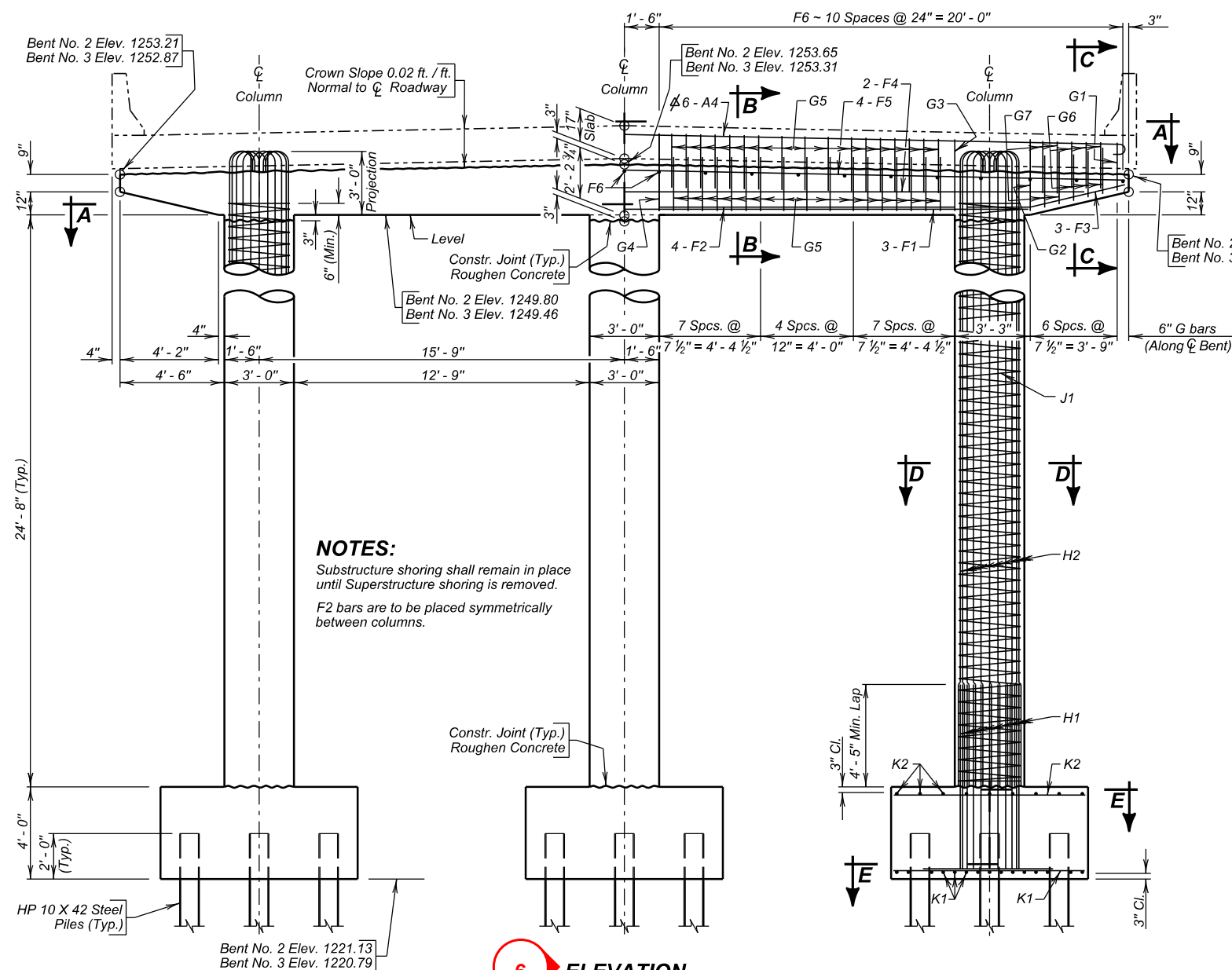
119' - 0 7/8" CONT. CONCRETE BRIDGE  
OVER HURLEY CREEK 15° RHF SKEW  
STA. 100 + 73.48 TO 101 + 92.56 SEC. 1/36-T97/98N-R53W  
STR. NO. 63-179-170 NH-PH 0018(180)420  
HL-93

TURNER COUNTY  
S. D. DEPT. OF TRANSPORTATION  
MARCH 2017

DESIGNED BY CL	CK. DES. BY PW	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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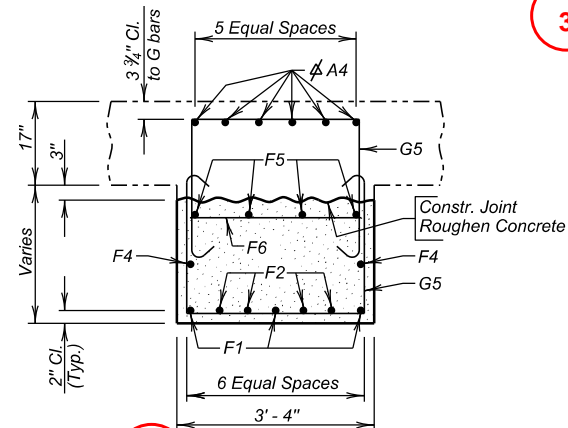


5 SEC. A - A

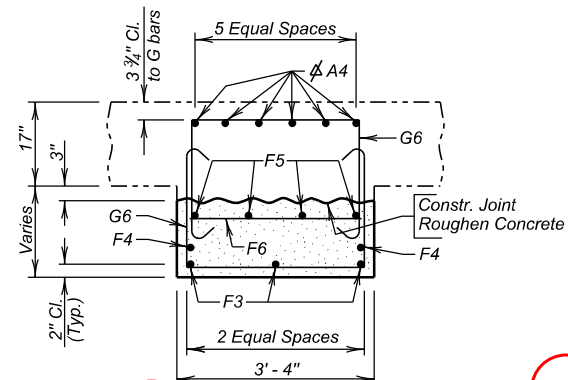


6 ELEVATION

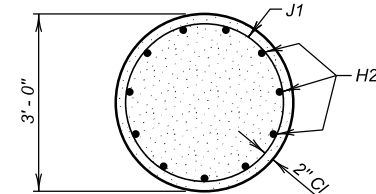
**NOTE:**  
The A4 bars may be difficult to place after columns and cap have been poured. The bar hooks will need to be tilted to fit in the space provided.



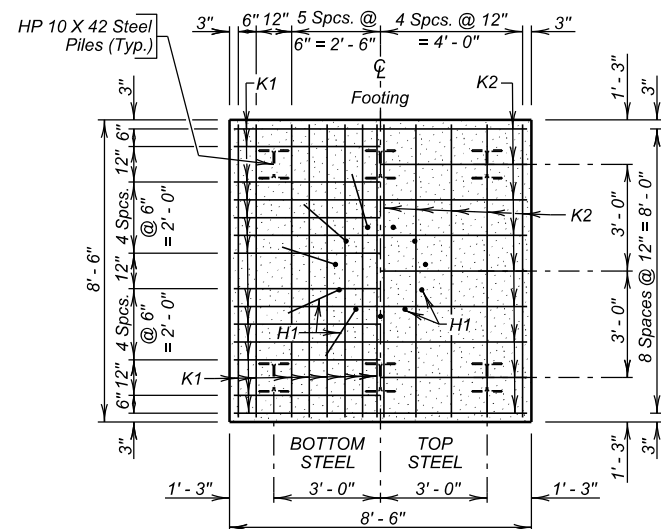
7 SEC. B - B



7 SEC. C - C



7 SEC. D - D



7 SEC. E - E

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.			

## REINFORCING SCHEDULE

(For One Bent)

Mk.	No.	Size	Length	Type	Bending Details
A4	6	7	45'-0"	1	
F1	3	7	34'-10"	Str.	
F2	8	7	12'-9"	Str.	
F3	6	7	7'-6"	19B	
F4	2	4	19'-10"	Str.	
F5	4	6	43'-0"	Str.	
F6	22	4	3'-0"	Str.	
G1	2	4	11'-3"	T1	
G2	2	4	13'-1"	T1	
G3	2	4	13'-0"	T1	
G4	2	4	13'-5"	T1	
G5	68	4	8'-7"	S3	
G6	12	4	8'-5"	S3	
G7	8	4	7'-11"	S3	
H1	33	9	10'-2"	17A	
H2	33	9	28'-11"	1A	
J1	3	4	428'-1"	Spiral	
K1	84	7	8'-3"	Str.	
K2	54	4	8'-3"	Str.	

All dimensions are out to out of bars.  
Φ Bars to be Epoxy Coated.

Spirals - Use 6" pitch and 1 1/2 extra turns at each end.  
Use 1 1/2 turns for lap at splice as required, or weld as approved by the Office of Bridge Design. Use 3 vertical spacer bars per column. Spirals may be smooth bars, bar length shown does not include splices.

## ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY	
		Bent No. 2	Bent No. 3
Class A45 Concrete, Bridge	Cu. Yd.	61.5	61.5
Reinforcing Steel	Lb.	7968	7968
Epoxy Coated Reinforcing Steel	Lb.	1117	1117
Structure Excavation, Bridge	Cu. Yd.	35.8	35.8
HP 10 X 42 Steel Test Pile, Furnish and Drive	Ft.	1 @ 115' = 115'	1 @ 115' = 115'
HP 10 X 42 Steel Bearing Pile, Furnish and Drive	Ft.	17 @ 110' = 1870'	17 @ 110' = 1870'

Δ Includes Spacer Bars: 168 lbs. at each bent. Each spacer bar is computed at 1/4 bs. per lin. ft. regardless of type furnished.

## REQUIRED LIST

- ① Title Block
- ② Project Block
- ③ Reinforcing Schedule
- ④ Estimated Quantities
- ⑤ Plan Section
- ⑥ Elevation View
- ⑦ Sections as Required
- ⑧ Standard Notes

## 1 BENT DETAILS FOR

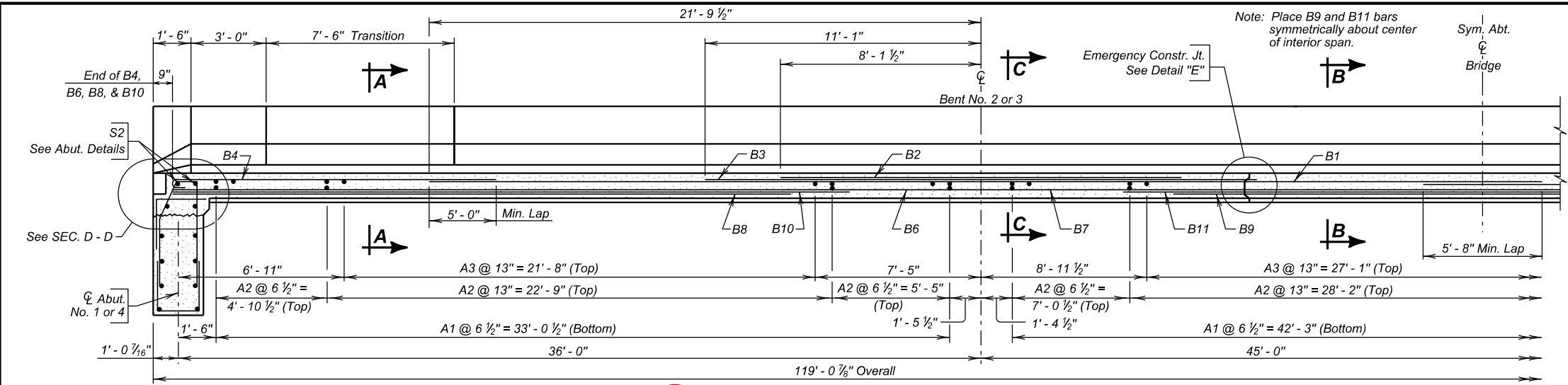
119'-0 7/8" CONT. CONCRETE BRIDGE

OVER HURLEY CREEK 15° RHF SKEW  
STA. 100 + 73.48 TO 101 + 92.56 SEC. 1/36-T97/98N-R53W  
STR. NO. 63-179-170 NH-PH 0018(180)420  
HL-93

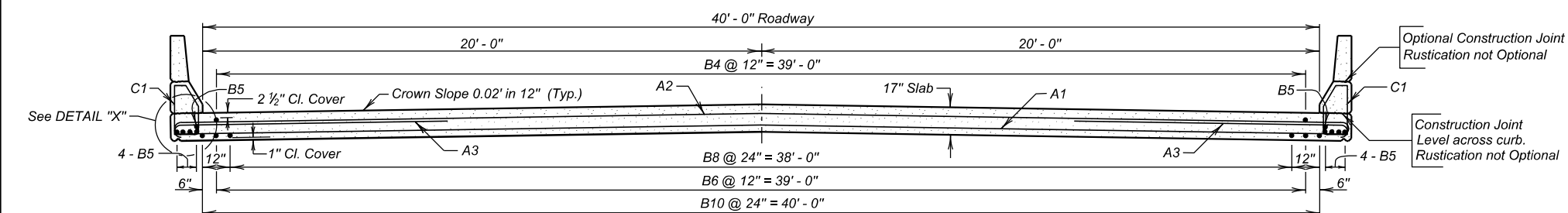
TURNER COUNTY  
S. D. DEPT. OF TRANSPORTATION  
MARCH 2017

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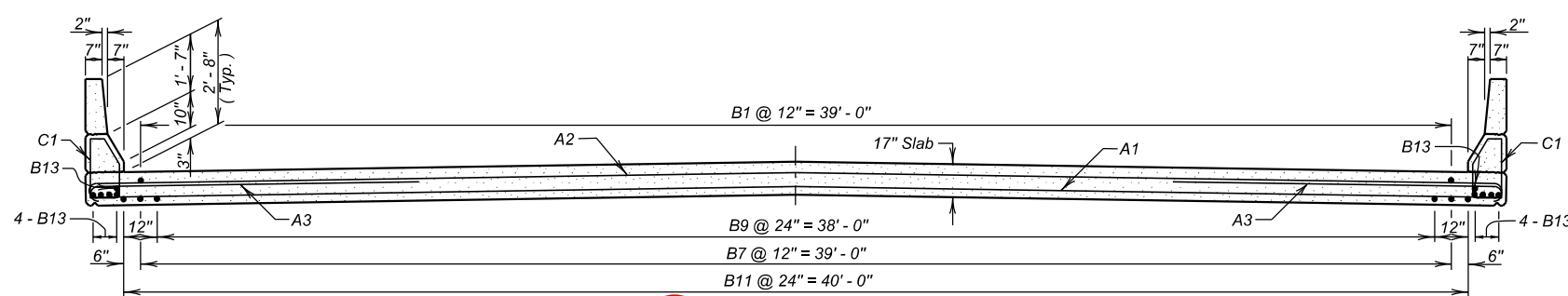




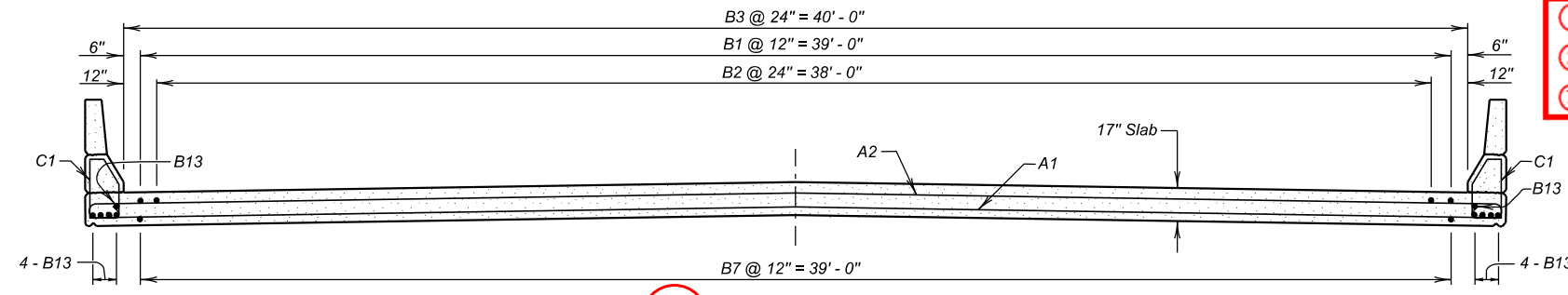
3 HALF LONGITUDINAL SECTIONAL VIEW



3 SEC. A - A

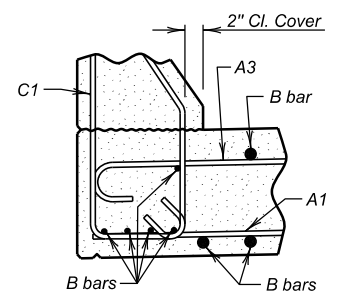


3 SEC. B - B



3 SEC. C - C

NOTE: All barrier curb details shown on END BLOCK & BARRIER CURB DETAILS sheet.



DETAIL "X"

- REQUIRED LIST
- ①Title Block

②Project Block

③Fill out remainder of Std. Base Sheet

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
A1	203	5	43'-10"	Str.	
A2	135	4	44'-10"	1	
A3	68	4	7'-10"	1A	
A4	(See Bent Details)				
B1	80	9	47'-5"	Str.	
B2	40	10	16'-3"	Str.	
B3	42	10	22'-2"	Str.	
B4	80	8	20'-8"	1A	
B5	20	5	36'-9"	Str.	
B6	80	8	36'-3"	Str.	
B7	40	8	45'-0"	Str.	
B8	40	8	29'-6"	Str.	
B9	20	9	33'-0"	Str.	
B10	42	9	31'-6"	Str.	
B11	21	8	37'-10"	Str.	
B12	24	5	49'-2"	Str.	
B13	10	5	45'-0"	Str.	
B15	12	5	15'-0"	Str.	
B16	6	4	58'-7"	Str.	
B17	8	4	8'-6"	19B	
B18	12	8	4'-3"	19B	
B19	12	5	2'-4"	Str.	
B20	12	6	4'-0"	17A	
B21	18	4	59'-11"	Str.	
C1	222	5	6'-10"	T1A	
C2	194	5	5'-1"	S11	
C3	4	5	5'-0"	S11	
C4	4	5	5'-0"	S11	
C5	4	5	5'-0"	S11	
C6	4	5	6'-8"	T1	
C7	4	5	6'-9"	T1	
C8	4	5	6'-11"	T1	
C9	4	5	7'-0"	T1	
C10	16	6	6'-9"	T1A	
C11	16	5	7'-1"	T1	
C12	4	6	6'-5"	17	
C13	4	5	5'-4"	17	
Z1	54	7	4'-0"	Str.	
NOTES-					
All reinforcing steel shall be epoxy coated.					
All dimensions are out to out of bars.					
± Bend in field as necessary to fit.					

NOTES-

All reinforcing steel shall be epoxy coated.

All dimensions are out to out of bars.

± Bend in field as necessary to fit.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge Deck	Cu. Yd.	286.8
Epoxy Coated Reinforcing Steel	Lb.	69820
Concrete Penetrating Sealer	Sq. Yd.	530

See DETAILS OF APPROACH SLAB ADJACENT TO BRIDGE Sheet for location of Z1 bars.

1 SUPERSTRUCTURE DETAILS (A)

FOR

119'-0 7/8" CONT. CONCRETE BRIDGE

OVER HURLEY CREEK 15° RHF SKEW

STA. 100 + 73.48 TO 101 + 92.56 SEC. 1/36-T97/98N-R53W

STR. NO. 63-179-170 NH-PH 0018(180)420

HL-93

TURNER COUNTY

S. D. DEPT. OF TRANSPORTATION

MARCH 2017

9 OF 20

DESIGNED BY CL CK. DES. BY PW DRAFTED BY BT

Steve A. Johnson

BRIDGE ENGINEER

- REQUIRED LIST
- 1

Title Block
- 2

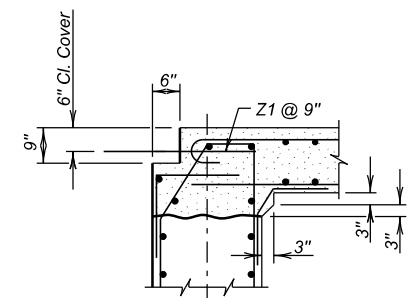
Project Block
- 3

Plan View
- 4

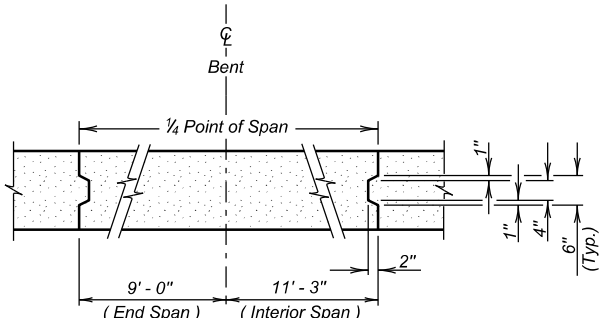
Centerline & Curb Elev.'s
- 5

Camber Diagram
- 6

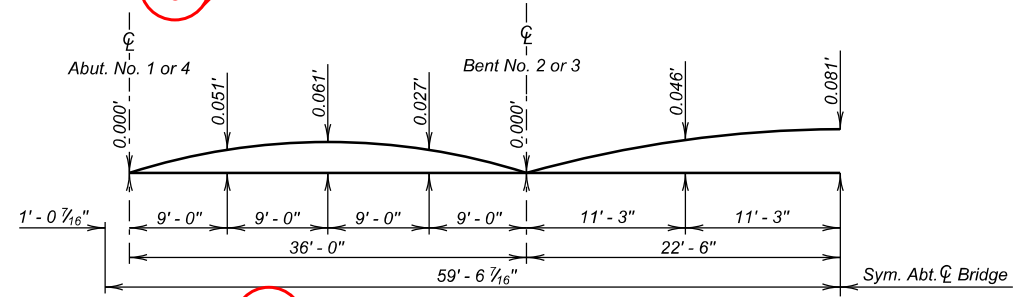
Details & Sections as Req'd



6

SEC. D - D

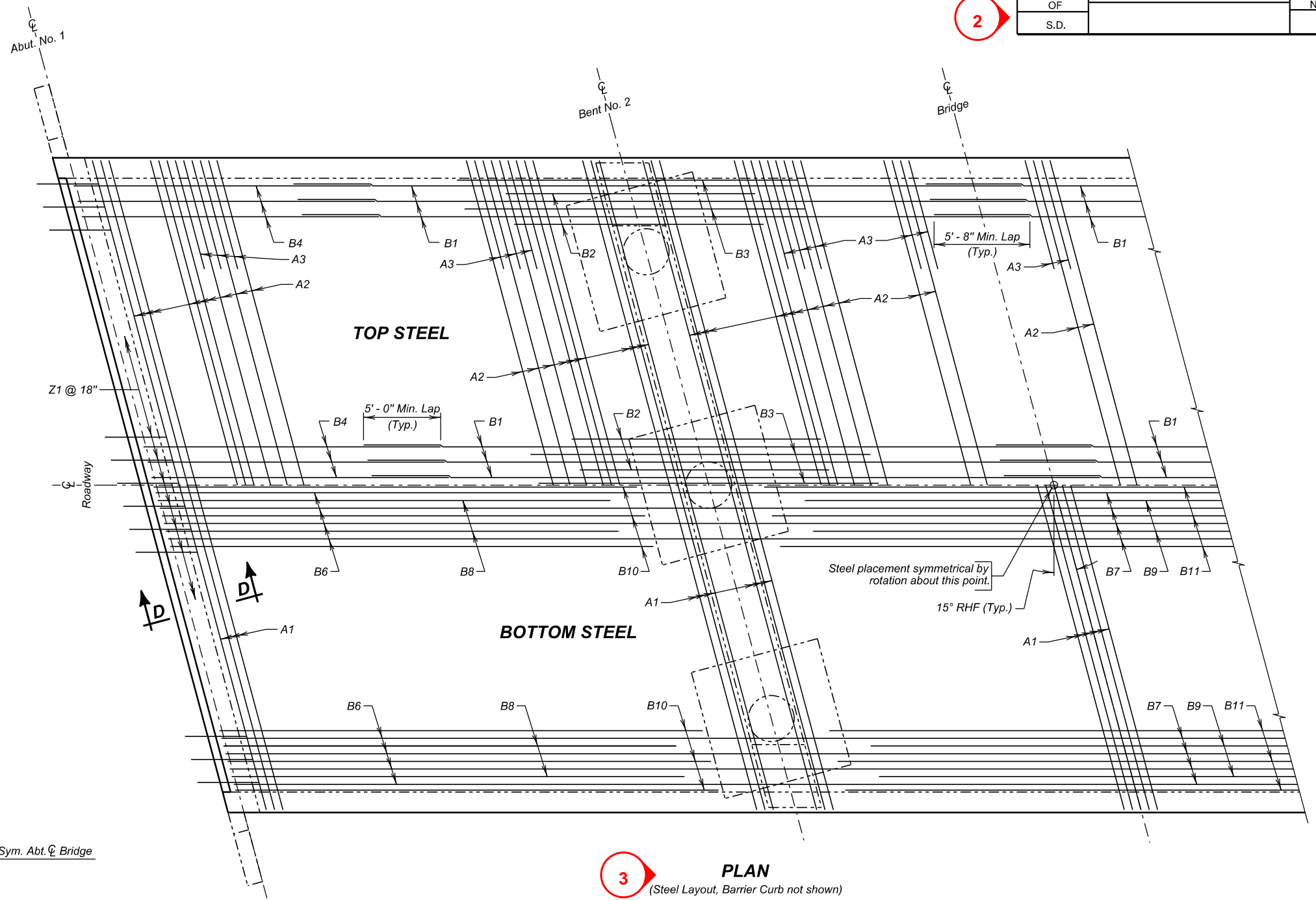
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DETAIL "E"

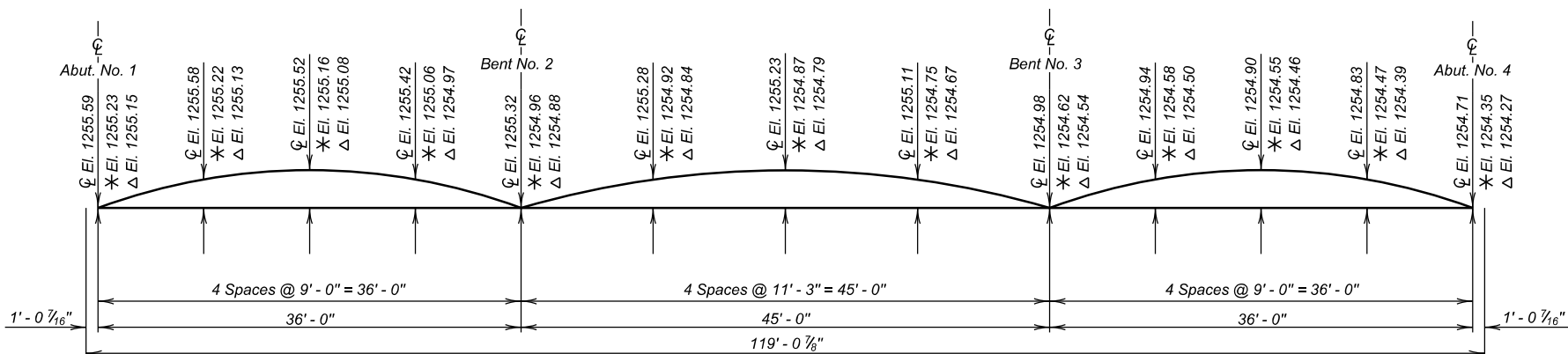
5

CAMBER DIAGRAM

Camber is calculated for dead load deflection plus plastic flow and shall be added to the proposed grade elevations at the respective stations to establish the elevations of the top of the finished roadway slab.



3

PLAN  
(Steel Layout, Barrier Curb not shown)

4

CENTERLINE AND CURB ELEVATIONS

Elevations indicated with \* are Top of Finished Slab at Left Curb line, with  $\bar{C}$  are Top of Finished Slab at Centerline Roadway and with  $\Delta$  are Top of Finished at Right Curb Line. Camber for Dead Load Deflection Plus Plastic Flow have been included in the elevations shown above.

1

SUPERSTRUCTURE DETAILS (B)

FOR

119' - 0 7/8" CONT. CONCRETE BRIDGE

OVER HURLEY CREEK 15° RHF SKEW

STA. 100 + 73.48 TO 101 + 92.56 SEC. 1/36-T97/98N-R53W

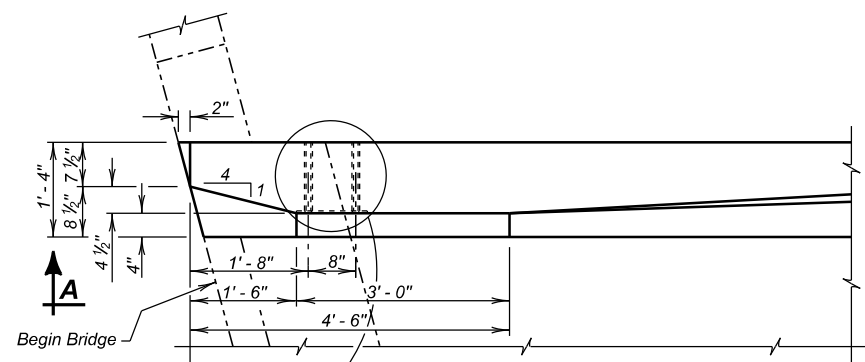
STR. NO. 63-179-170 NH-PH 0018(180)420

HL-93

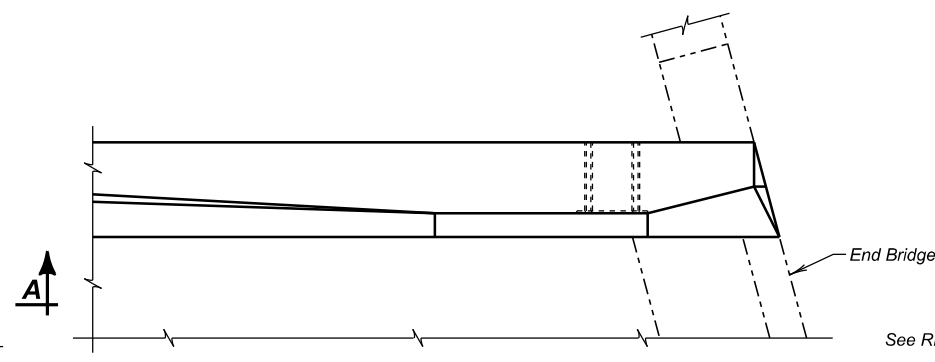
TURNER COUNTY

S. D. DEPT. OF TRANSPORTATION

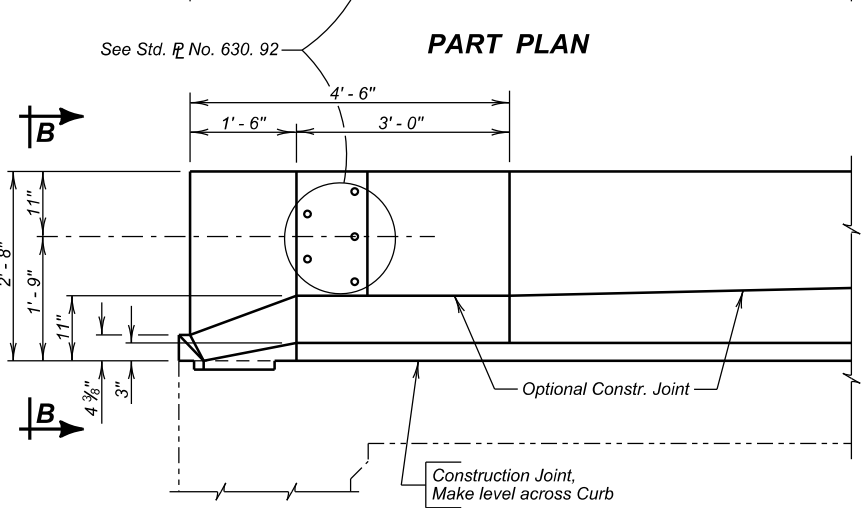
MARCH 2017



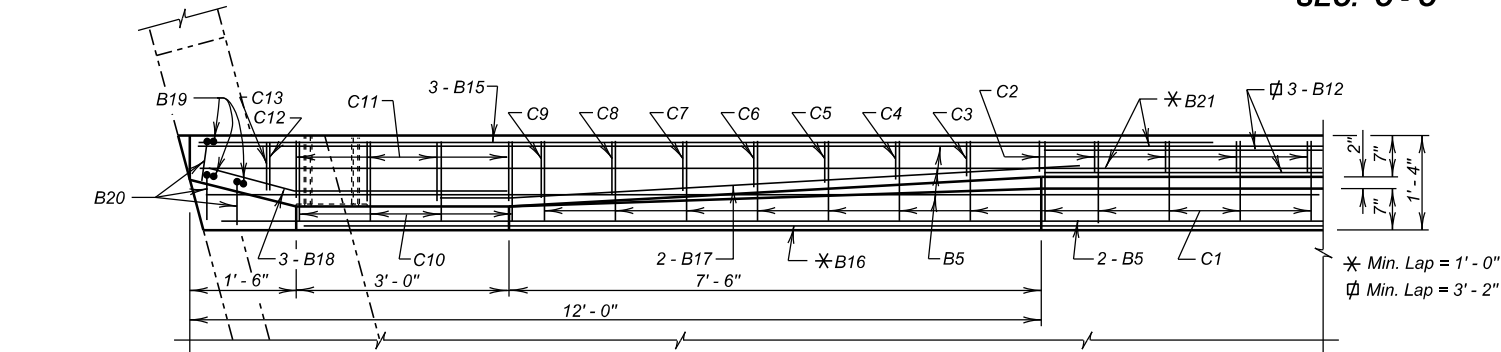
PART PLAN



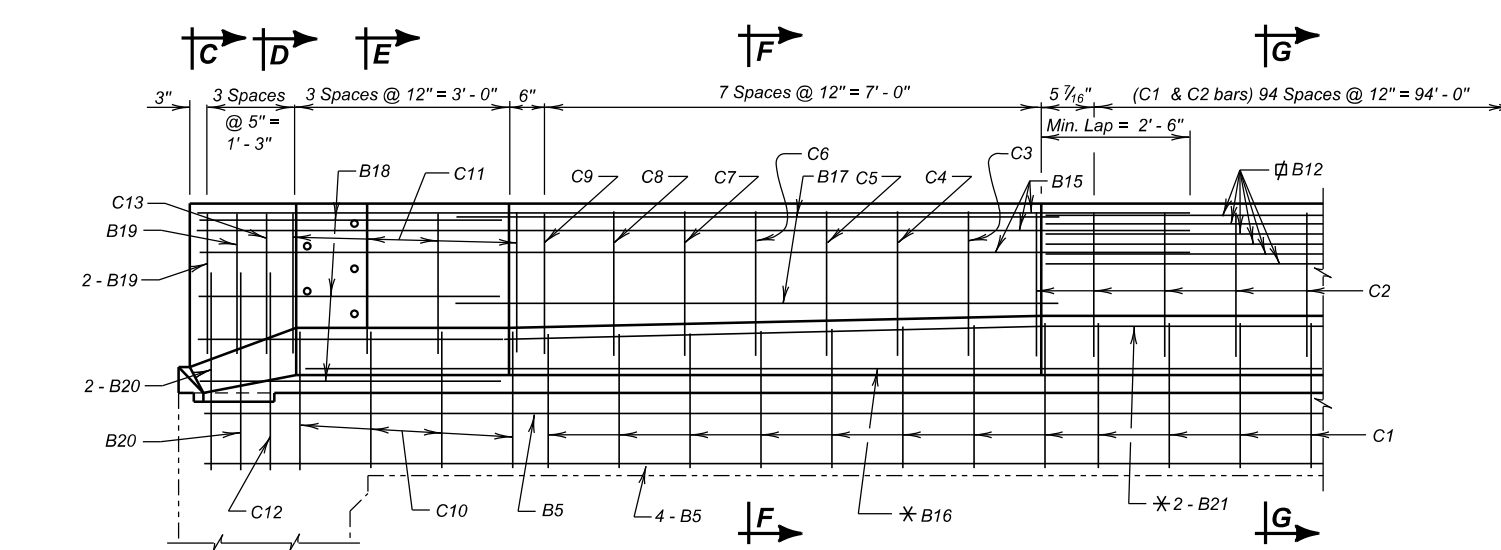
VIEW B - B



VIEW A - A

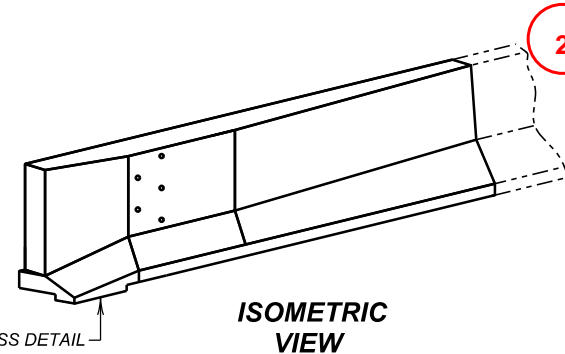


PLAN

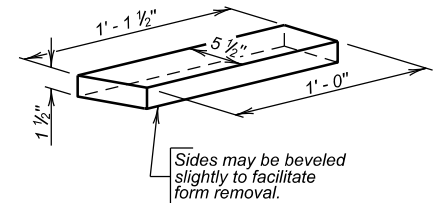


ELEVATION

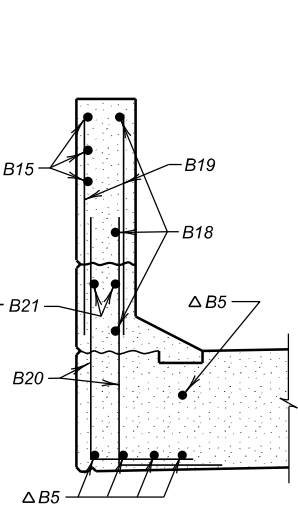
NOTE:  
For listing of re-bars see Superstructure Details.



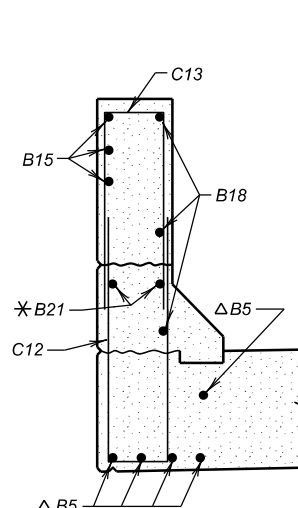
ISOMETRIC VIEW



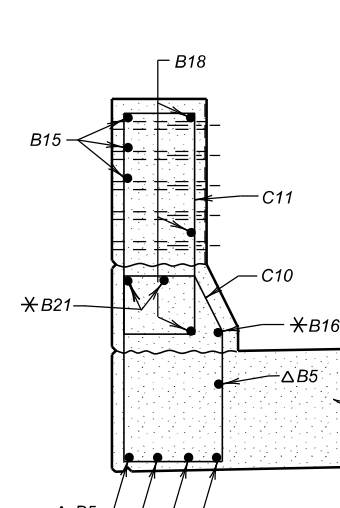
RECESS DETAIL



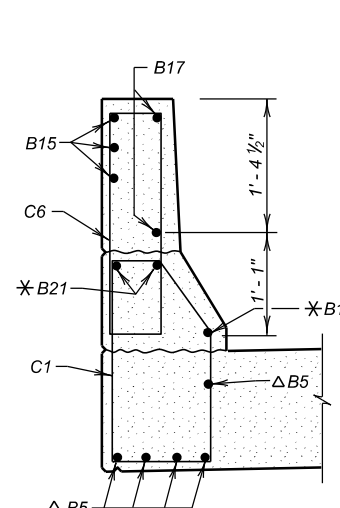
SEC. C - C



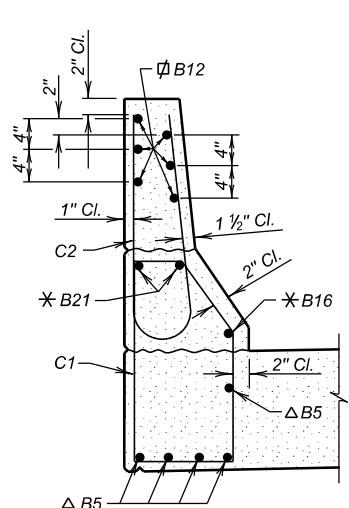
SEC. D - D



SEC. E - E



SEC. F - F



SEC. G - G

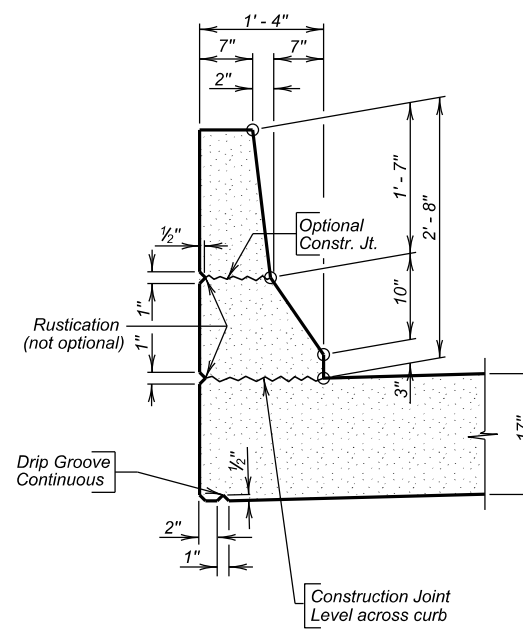
△ Place as shown in Superstructure Details.

## REQUIRED LIST

- ① Title Block
- ② Project Block
- ③ Fill out remainder of Std. Base Sheet

## END BLOCK AND BARRIER CURB DETAILS

FOR  
119' - 0 7/8" CONT. CONCRETE BRIDGE  
OVER HURLEY CREEK 15° RHF SKEW  
STA. 100 + 73.48 TO 101 + 92.56 SEC. 1/36-T97/98N-R53W  
STR. NO. 63-179-170 NH-PH 0018(180)420  
HL-93



BARRIER DETAILS

TURNER COUNTY  
S. D. DEPT. OF TRANSPORTATION  
MARCH 2017



① Title Block	⑤ Detail "X"
② Project Block	⑥ Sec. E - E
③ Estimated Quantities	⑦ Spill Cone Detail
④ Plan View	



7



The diagram illustrates a cross-section of a bridge end embankment. The components and dimensions are as follows:

- Bridge End Embankment**: The overall structure on the left.
- Granular Bridge End Backfill**: The material directly behind the embankment face.
- Vertical Composite Drain**: A vertical drainage system consisting of a **4" Dia. Corrugated Polyethylene Perforated Drainage Tubing** surrounded by **Controlled Density Fill**.
- Abutment Backwall**: The vertical wall on the right side of the embankment.
- Top of Berm**: The horizontal surface at the top of the embankment.
- Controlled Density Fill**: A layer of fill material located below the top of the berm.
- Dimensions**:
  - Horizontal dimensions:  $1' - 0 \frac{7}{8}"$  (width of the embankment face),  $3' - 1 \frac{1}{4}"$  (width of the granular backfill), and  $1' - 6 \frac{7}{8}"$  (width of the drainage area).
  - Vertical dimensions:  $1' - 0"$  (height of the embankment face),  $1' - 0"$  (height of the drainage area), and  $1' - 0"$  (height of the berm).
- Materials**:
  - Type B Drainage Fabric**: A fabric layer on the left side of the embankment.
  - Porous Backfill**: A layer of porous material below the drainage fabric.
  - 6 Mil Polyethylene Sheeting**: A non-pervious layer below the porous backfill.
  - Non-pervious Backfill Material**: A layer of non-pervious material below the polyethylene sheeting.

*Backfill to be compacted to the satisfaction of the Engineer.*

5

1. 199 ft. dia. Slotted Corrugated Polyethylene Drainage Tubing.
2. 32 ft. 4" dia. Corrugated Polyethylene Drainage Tubing.
3. 335 sq. ft. Vertical Composite Drain
4. 40 ft. 4" dia. Std. Black Pipe with Rodent Screens.

Items 1 thru 4 are approximate quantities contained in the 4" Underdrain Pipe and are for information only.

5. 3798 sq. ft. 6 mil Polyethylene Sheeting, not including laps.
6. 292 sq. yd. Type B Drainage Fabric.

Items 5 and 6 are approximate quantities contained in the Granular Bridge End Backfill and are for information only.

☐ For estimating purposes only, a factor of 1.89 tons/cu. yd. was used to convert cu. yds. to tons.

✂ Shrinkage Factor of 1.25 Used.

♣ Quantity based on a 12" wide trench.

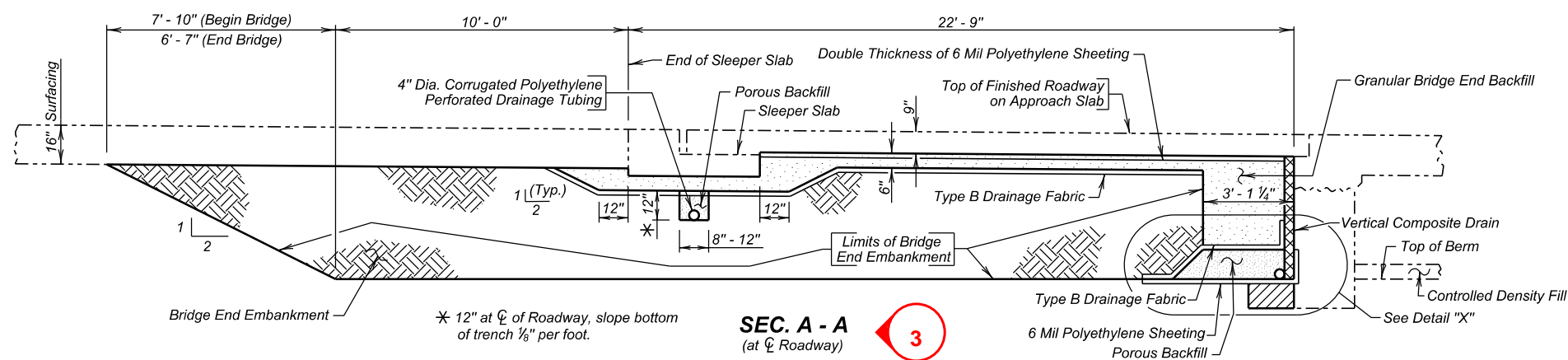
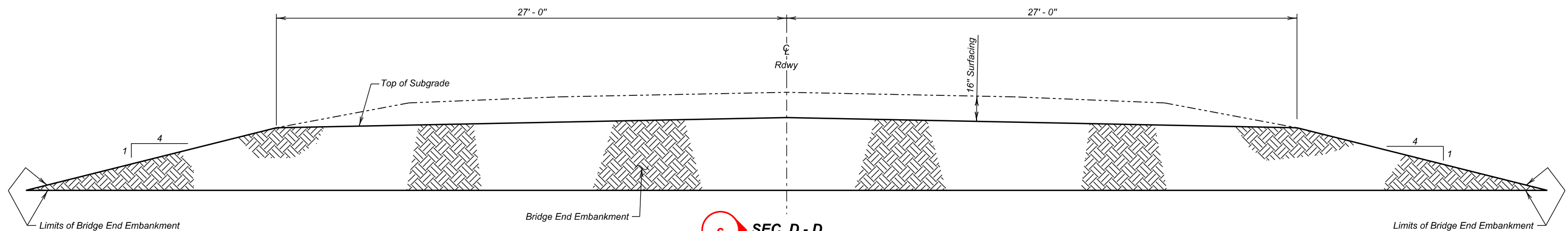
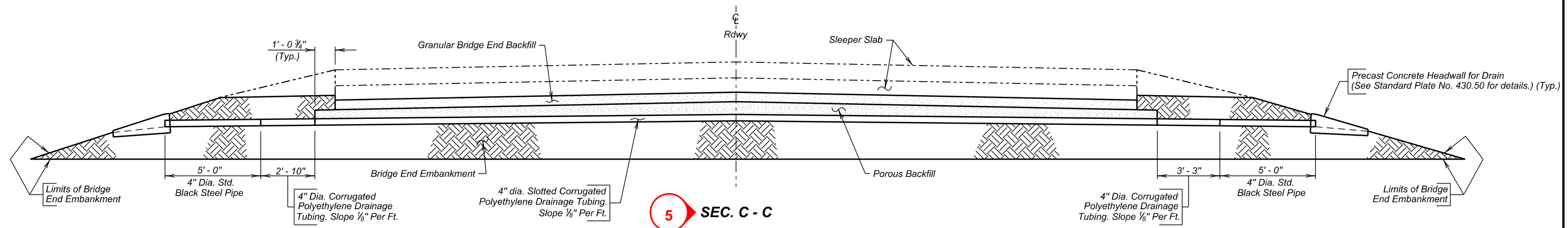
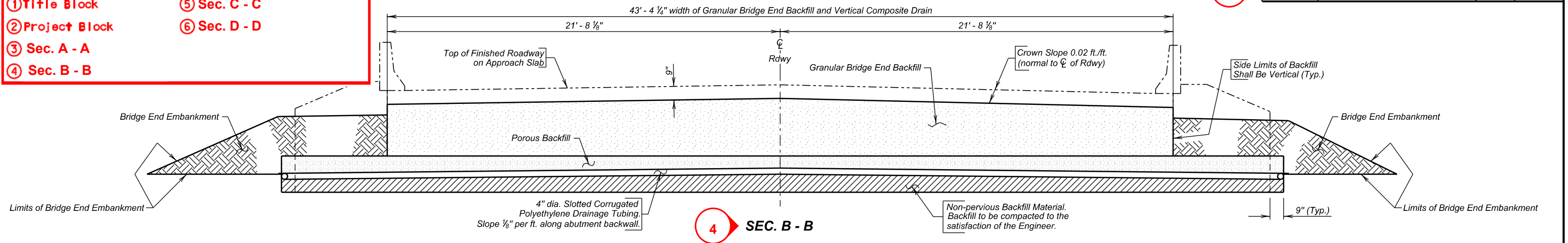
FOR  
119' - 0  $\frac{7}{8}$ " CONT. CONCRETE BRIDGE

TURNER COUNTY  
S. D. DEPT. OF TRANSPORTATION  
MARCH 2017 12 OF 20

REQUIRED LIST	
① Title Block	⑤ Sec. C - C
② Project Block	⑥ Sec. D - D
③ Sec. A - A	
④ Sec. B - B	

① Title Block	⑤ Sec. C - C
② Project Block	⑥ Sec. D - D
③ Sec. A - A	
④ Sec. B - B	

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.			



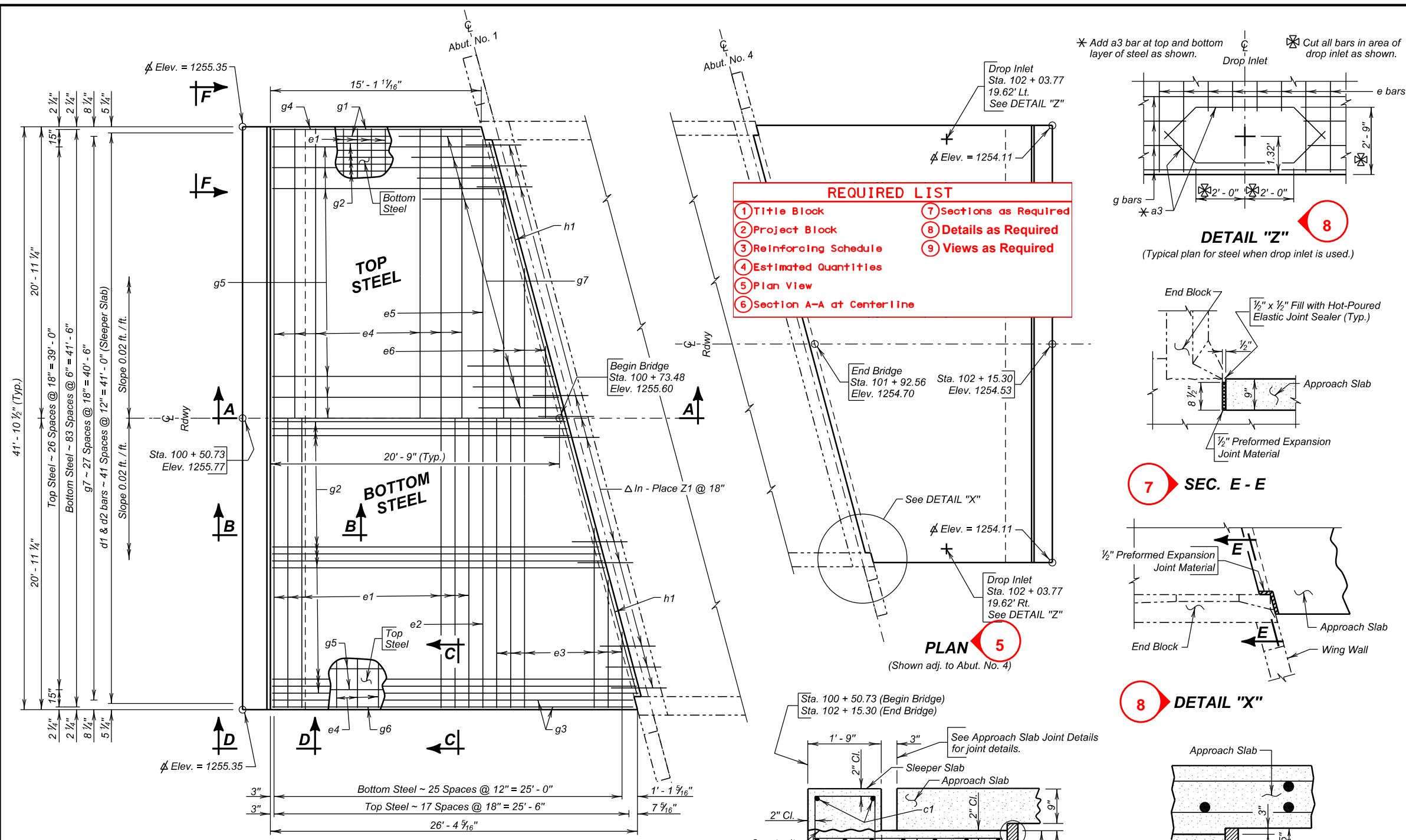
### 1 DETAILS OF BRIDGE END BACKFILL (B)

FOR  
119' - 0  $\frac{7}{8}$ " CONT. CONCRETE BRIDGE  
OVER HURLEY CREEK 15° RHF SKEW  
STA. 100 + 73.48 TO 101 + 92.56 SEC. 1/36-T97/98N-R53W  
STR. NO. 63-179-170 NH-PH 0018(180)420  
HL-93

TURNER COUNTY  
S. D. DEPT. OF TRANSPORTATION  
MARCH 2017

13) OF 20

DESIGNED BY CL	CK. DES. BY PW	DRAFTED BY BT	 BRIDGE ENGINEER
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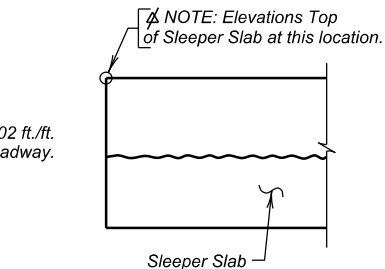
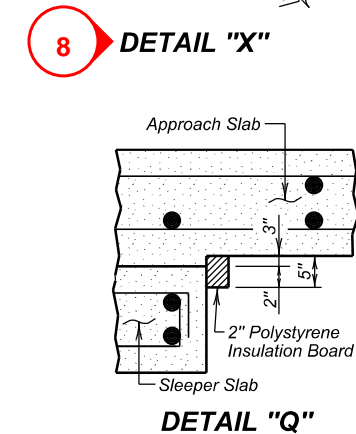
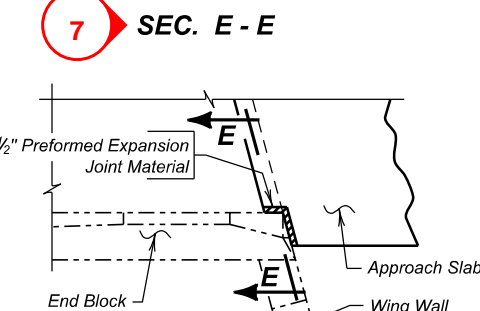
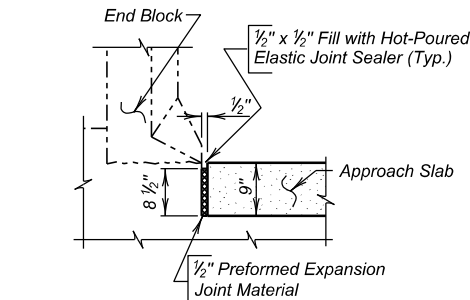
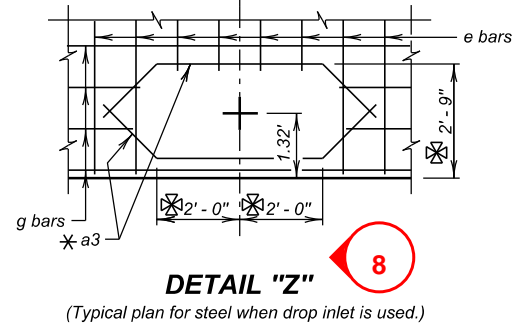


- REQUIRED LIST**
- 1 Title Block
  - 2 Project Block
  - 3 Reinforcing Schedule
  - 4 Estimated Quantities
  - 5 Plan View
  - 6 Section A-A at Centerline
  - 7 Sections as Required
  - 8 Details as Required
  - 9 Views as Required

\* Add a3 bar at top and bottom layer of steel as shown.

Drop Inlet  
Sta. 102 + 03.77  
19.62' Lt.  
See DETAIL "Z"

✕ Cut all bars in area of drop inlet as shown.



STATE OF  
S.D.

PROJECT

SHEET NO.

TOTAL SHEETS

**REINFORCING SCHEDULE**  
(For Two Approach Slabs and Two Sleeper Slabs)

Mk.	No.	Size	Length	Type
<b>Sleeper Slabs</b>				
c1	32	5	41' - 7"	Str.
d1	168	4	5' - 0"	2
d2	84	4	6' - 5"	T2
<b>Approach Slabs</b>				
a3	8	4	8' - 0"	19A
e1	30	6	41' - 7"	Str.
e2	2	6	40' - 10"	Str.
e3	10	6	44' - 6"	Str.
e4	20	4	41' - 7"	Str.
e5	2	4	40' - 10"	Str.
e6	7	4	40' - 9"	Str.
g1	4	8	14' - 11"	Str.
g2	80	8	42' - 0"	Str.
g3	4	8	25' - 11"	Str.
g4	2	4	14' - 11"	Str.
g5	27	4	41' - 11"	Str.
g6	2	4	25' - 11"	Str.
g7	56	4	6' - 0"	Str.
h1	4	6	41' - 0"	Str.

Type T2

Type 2

Type 19A

Cut 7

Cut 10

Cut 10

Cut 27

Cut 80

Cut 10

NOTES:

All bars to be epoxy coated.

All dimensions are out to out of bars.

See cutting diagram.

**ESTIMATED QUANTITIES**  
(For Two Approach Slabs & Two Sleeper Slabs)

ITEM	UNIT	QUANTITY
Concrete Approach Slab for Bridge	Sq. Yd.	197.8
Concrete Approach Sleeper Slab for Bridge	Sq. Yd.	41.9

1. 50.1 Cu. Yds. Concrete in Approach Slabs.

2. 14197 Lbs. Epoxy coated Re-Steel in Approach Slabs.

3. 15.9 Cu. Yds. Concrete in Sleeper Slabs.

4. 2309 Lbs. Epoxy coated Re-Steel in Sleeper Slab.

5. 34.9 Sq. Ft. of 2" Polystyrene Insulation Board

Items 1 thru 5 are approximate quantities contained in the above bid items and are for information only.

**VIEW D - D**

119' - 0 7/8" CONT. CONCRETE BRIDGE

OVER HURLEY CREEK 15° RHF SKEW

STA. 100 + 73.48 TO 101 + 92.56 SEC. 1/36-T97/98N-R53W

STR. NO. 63-179-170 NH-PH 0018(180)420

HL-93

TURNER COUNTY

S. D. DEPT. OF TRANSPORTATION

MARCH 2017

DESIGNED BY  
CL

CK. DES. BY  
PW

DRAFTED BY  
BT

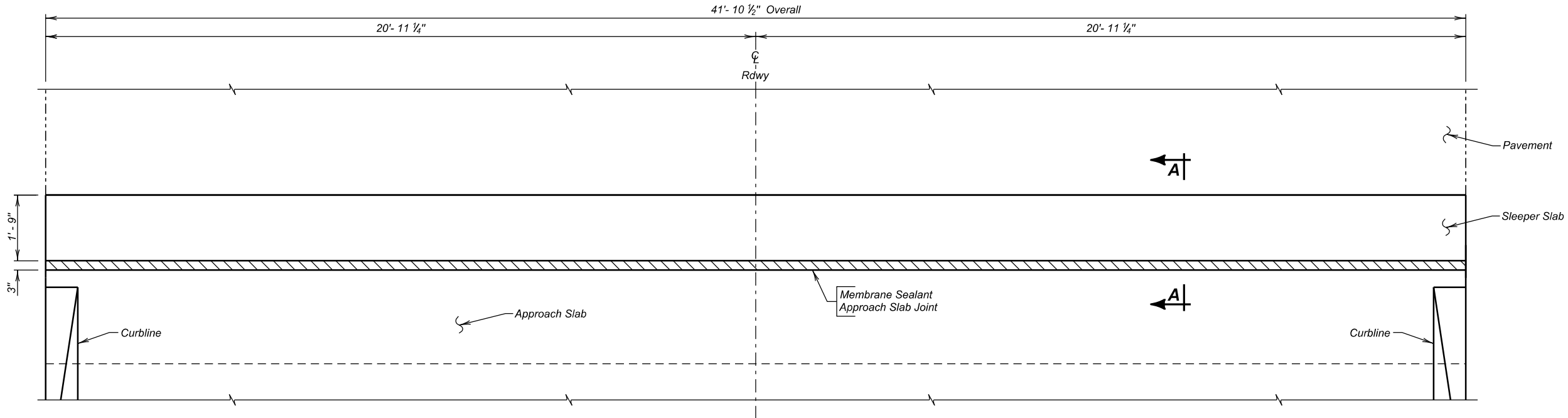
Steve A. Johnson  
BRIDGE ENGINEER

14

OF

20

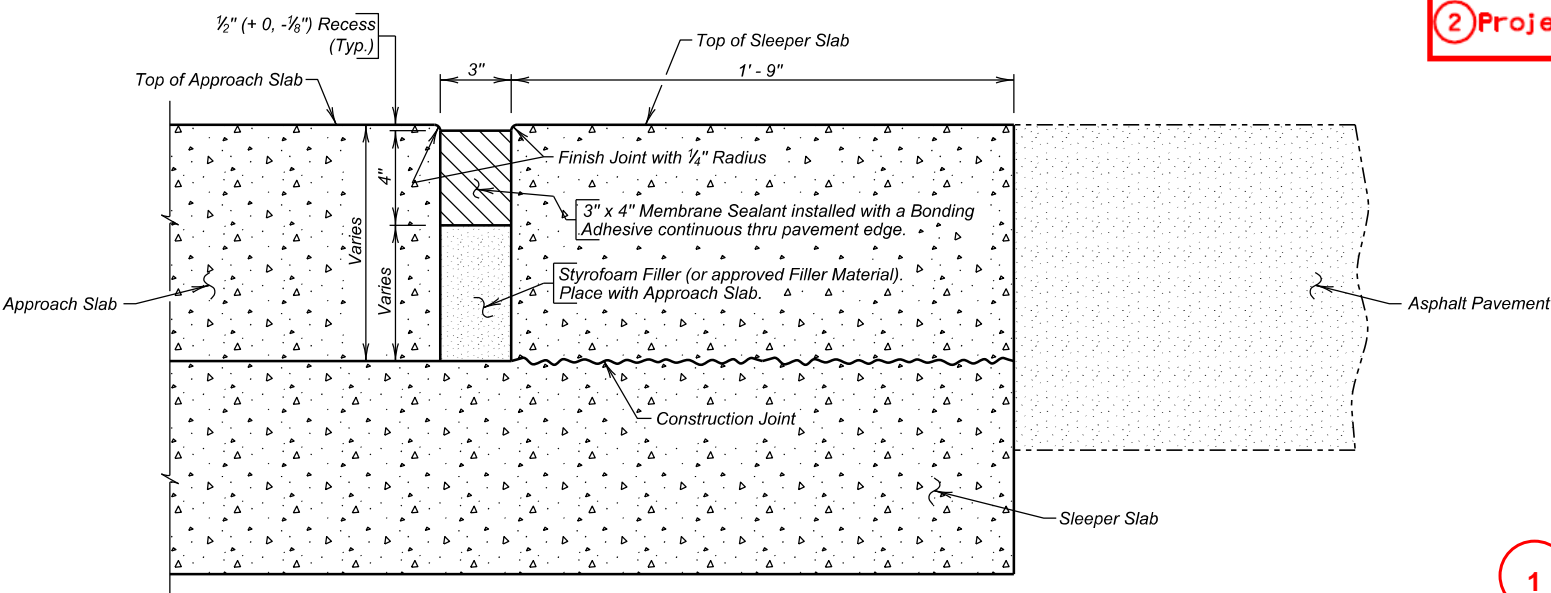




GENERAL NOTES

- The Membrane Sealant shall be on the approved product list for Membrane Sealant Expansion Joints.
- The manufacturer shall supply the membrane sealant in packaging that precompresses the membrane sealant. The precompressed dimension shall be as recommended by the sealant manufacturer to provide a water tight seal throughout a joint movement range of + 25% (minimum) from the specified joint opening dimension. In no case shall the precompressed dimension exceed 75% of the joint opening width. The foam sealant shall be slowly self expanding to permit workers ample time to install the membrane sealant before the membrane sealant exceeds the joint opening width.
- The membrane sealant shall be supplied in pieces 5 feet in length or longer. The foam sealant shall be ultra-violet and ozone resistant.
- The bonding adhesive used to attach the membrane sealant to the adjacent concrete shall be approved by the membrane sealant manufacturer.
- Adhesive used to join adjacent pieces of the membrane sealant shall be as recommended by the manufacturer.
- If Styrofoam filler material is used in the construction, it shall be closed cell and water-tight as approved by the Engineer.
- The minimum ambient air temperature at the time of joint installation and adhesive curing shall be 40° F.
- A technical representative of the membrane sealant manufacturer shall be present at the jobsite during installation. The technical representative shall be knowledgeable in the correct procedures for the preparation and installation of the joint material to insure the Contractor installs the joint to the Manufacturers recommendations.
- Concrete surfaces that will be in contact with the membrane sealant shall be thoroughly cleaned by abrasive blasting to remove all laitance and contaminants (such as oil, curing compounds, etc.) from the concrete surface. At a minimum two passes of abrasive blasting with the nozzle held at an angle to within 1 to 2 inches of the concrete surface will be required. Cleaning of the concrete surfaces with solvents, wire brushing, or grinding shall not be permitted.
- After abrasive blasting, but immediately prior to membrane joint installation, the entire joint contact surface shall be air blasted. The air compressor used for joint cleaning shall be equipped with trap devices capable of providing moisture-free and oil-free air at a recommended pressure of 90 psi. To obtain complete bonding with the adhesive, the adjacent concrete surfaces must be dry and clean. The contact surfaces for the joint shall be visually inspected by the Engineer immediately prior to joint installation to verify the surface is dry and clean.
- Individual spliced sections shall be installed as per the manufacturers' recommendations. The membrane joint sealant manufacturer shall submit a detailed installation procedure to the Engineer at least 5 days prior to joint installation for his review.
- Traffic shall not be allowed on the joint for a minimum of 3 hours unless otherwise directed by the Engineer.
- Use plywood or other material to protect concrete adjacent to the joint from spalling before any equipment is moved across the joint. Any spall areas will be repaired at the Contractor's expense by breaking out and replacing adjacent concrete, as approved by the Engineer.
- The Membrane Sealant Expansion Joint will be measured in feet to the nearest one-tenth foot, complete in place. Measurement will be made of the overall horizontal length. The Membrane Sealant Expansion Joint will be paid for at the contract unit price per foot complete in place. Payment for this item shall be full compensation for furnishing all the required materials in place, including labor, equipment and incidentals necessary to complete the work in accordance with the plans and the foregoing specifications.

PLAN OF APPROACH SLAB JOINT



SEC. A - A

ESTIMATED QUANTITIES		
( For Two Approach Slabs )		
ITEM	UNIT	QUANTITY
Membrane Sealant Expansion Joint	Ft.	83.8

REQUIRED LIST

- 1 Title Block
- 2 Project Block
- 3 Fill out Remainder of Standard Base Sheet

1 APPROACH SLAB JOINT DETAILS

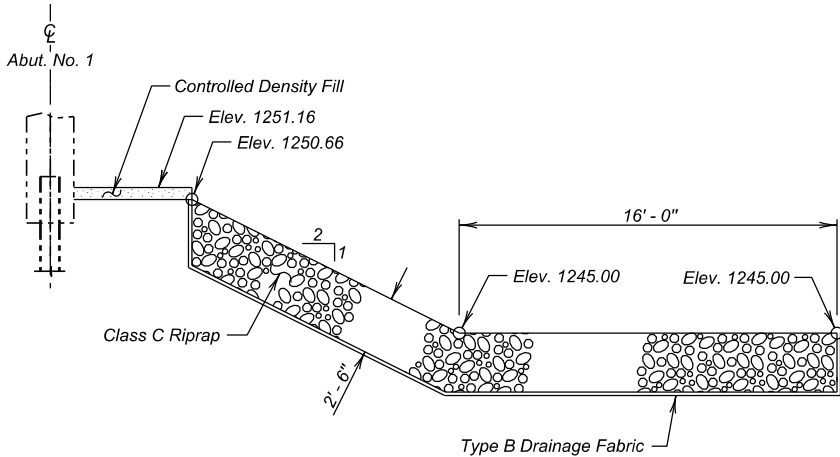
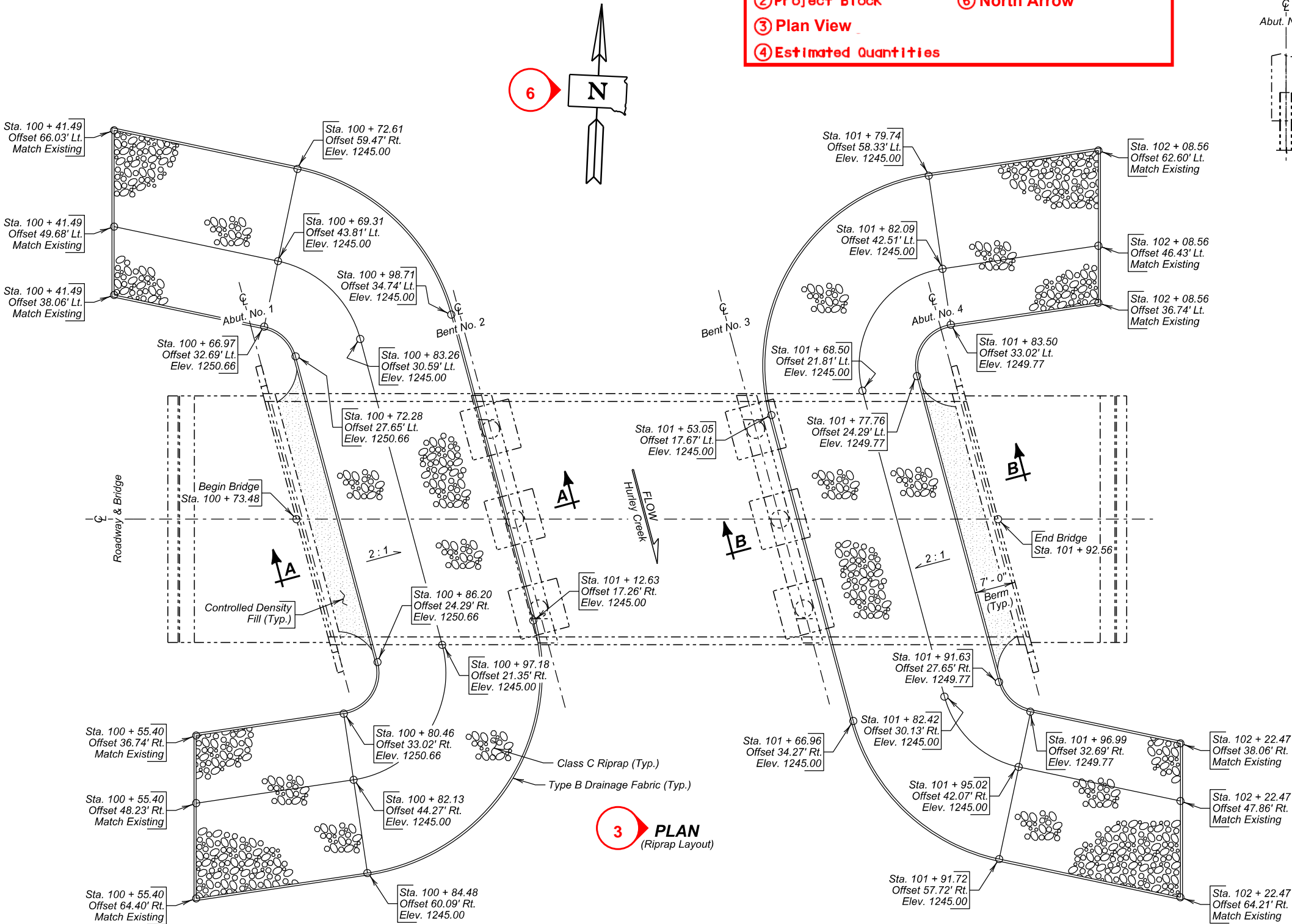
FOR  
119' - 0 7/8" CONT. CONCRETE BRIDGE

OVER HURLEY CREEK 15° RH F SKEW  
STA. 100 + 73.48 TO 101 + 92.56 SEC. 1/36-T97/98N-R53W  
STR. NO. 63-179-170 NH-PH 0018(180)420  
HL-93

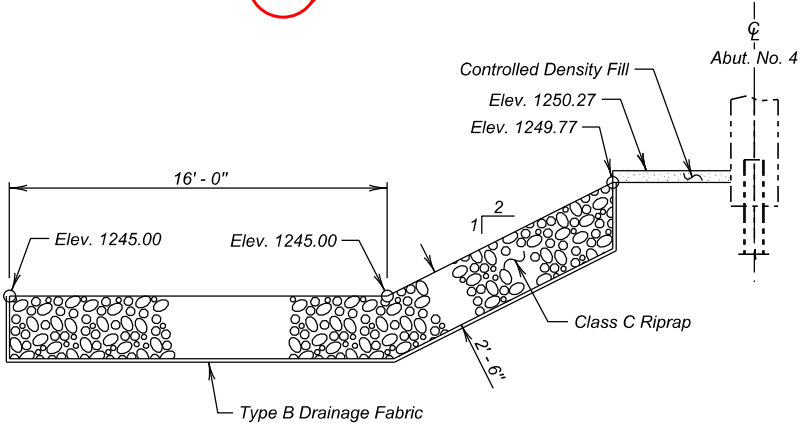
TURNER COUNTY  
S. D. DEPT. OF TRANSPORTATION  
MARCH 2017

REQUIRED LIST

- ① Title Block
- ② Project Block
- ③ Plan View
- ④ Estimated Quantities
- ⑤ Sections as Required
- ⑥ North Arrow



SEC. A - A



SEC. B - B

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class C Riprap	Ton	1141.2
Type B Drainage Fabric	Sq. Yd.	1237
Controlled Density Fill	Cu. Yd.	11.5

\* For estimating purposes only, a factor of 1.4 tons/cu. yd. was used to convert Cu. Yds. to Tons.

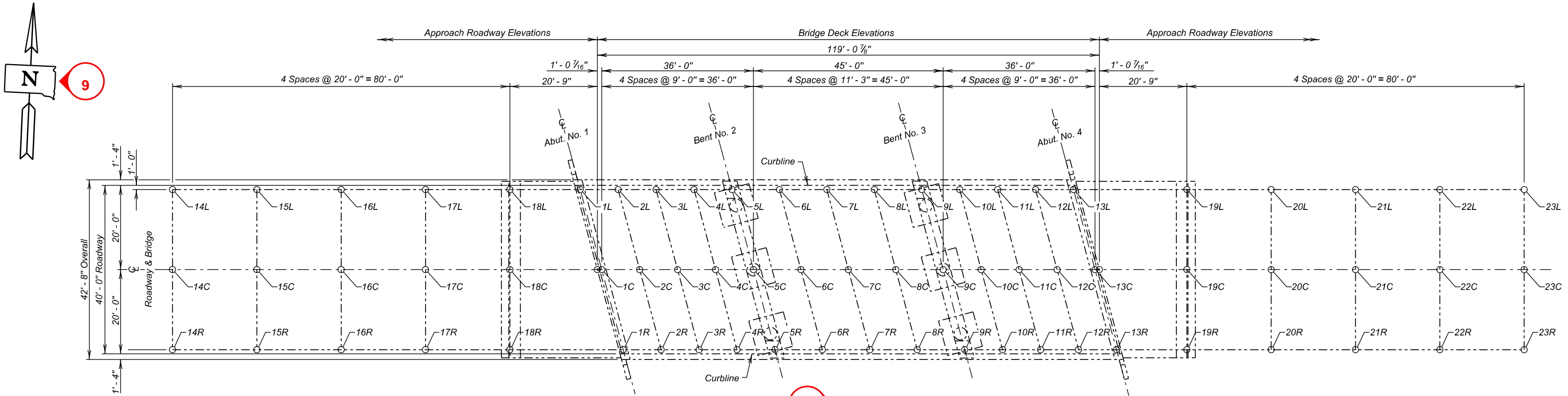
RIPRAP DETAILS

FOR  
119' - 0 7/8" CONT. CONCRETE BRIDGE  
OVER HURLEY CREEK 15° RHF SKEW  
STA. 100 + 73.48 TO 101 + 92.56 SEC. 1/36-T97/98N-R53W  
STR. NO. 63-179-170 NH-PH 0018(180)420  
HL-93

TURNER COUNTY  
S. D. DEPT. OF TRANSPORTATION  
MARCH 2017

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.			



PLAN

Table of As-Built Elevations - Bridge Deck

Location	Elevation	Location	Elevation	Location	Elevation
1L		1C		1R	
2L		2C		2R	
3L		3C		3R	
4L		4C		4R	
5L		5C		5R	
6L		6C		6R	
7L		7C		7R	
8L		8C		8R	
9L		9C		9R	
10L		10C		10R	
11L		11C		11R	
12L		12C		12R	
13L		13C		13R	

Table of As-Built Elevations - Approach Roadway

Location	Elevation	Location	Elevation	Location	Elevation
14L		14C		14R	
15L		15C		15R	
16L		16C		16R	
17L		17C		17R	
18L		18C		18R	
19L		19C		19R	
20L		20C		20R	
21L		21C		21R	
22L		22C		22R	
23L		23C		23R	

Table of Elevations - Bridge Survey Markers

Location	Station - Offset	Elevation
Begin Bridge		
End Bridge		

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Bridge Elevation Survey	L. S.	Lump Sum

NOTE -

The Contractor shall be responsible for producing the As - Built Elevation Survey soon after construction is complete and before the bridge is opened to traffic. The As - Built Elevations of the Bridge shall be taken and recorded at the locations shown by the tables on this sheet. The completed tables shall be given to the Engineer who will forward a copy to the Office of Bridge Design and the Region Office.

AS-BUILT ELEVATION SURVEY

FOR

119' - 0 7/8" CONT. CONCRETE BRIDGE

OVER HURLEY CREEK 15° RHF SKEW  
STA. 100 + 73.48 TO 101 + 92.56 SEC. 1/36-T97/98N-R53W  
STR. NO. 63-179-170 NH-PH 0018(180)420  
HL-93

TURNER COUNTY

S. D. DEPT. OF TRANSPORTATION

MARCH 2017

17 OF 20

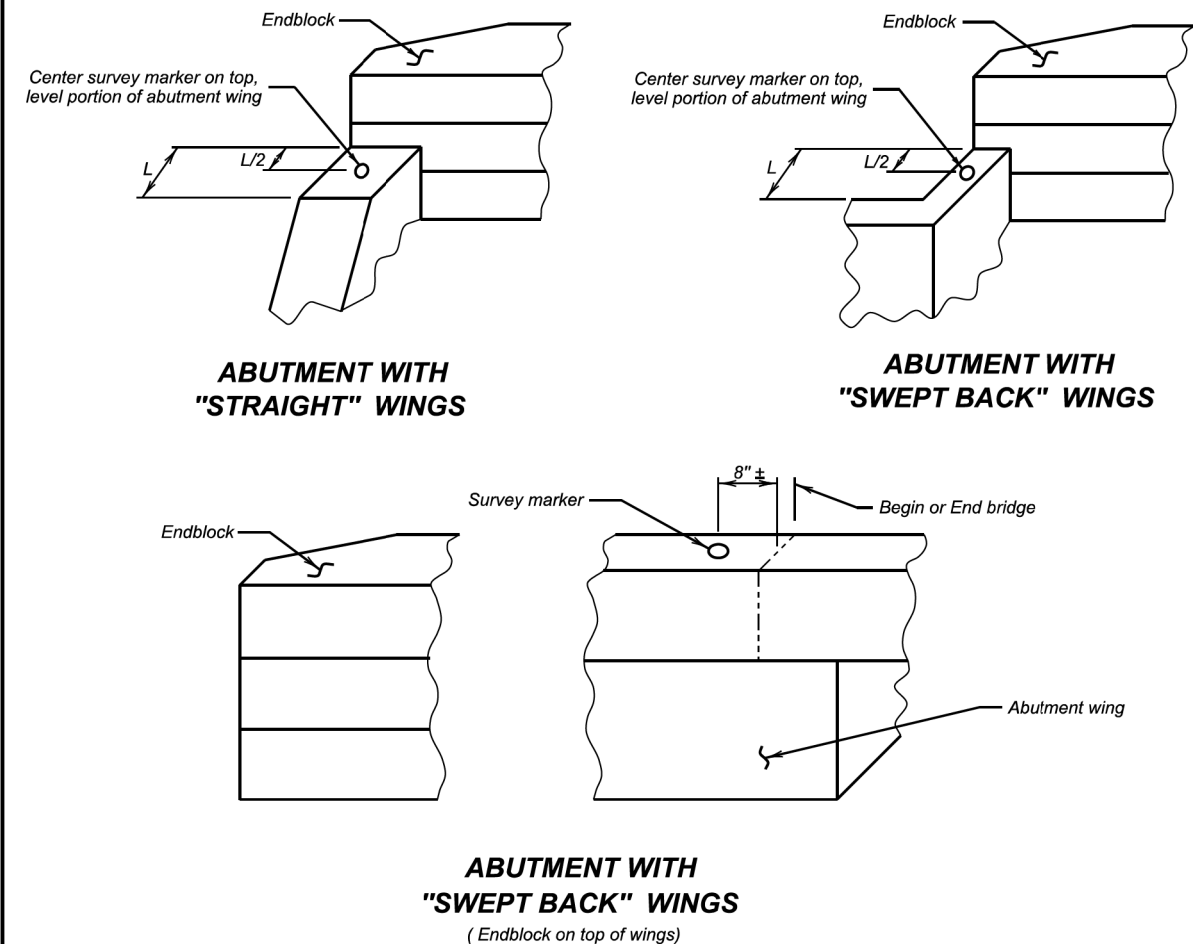
DESIGNED BY CL	CK. DES. BY PW	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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REQUIRED LIST

- ① Title Block
- ② Project Block
- ③ Survey Datum Box
- ④ Plan View
- ⑤ Estimated Quantities
- ⑥ Table for Shot Elevations
- ⑦ Bridge Survey Marker Table
- ⑧ Notes as Required
- ⑨ North Arrow







- GENERAL NOTES:**
- Survey markers shall be located at each abutment on the same side of the bridge as the year plate. Place survey markers on abutment wings as shown. Two survey markers will be required at each bridge.
  - Survey markers shall be of a type intended for installation in concrete, be made of solid brass or bronze, have a domed top and be either a 3" top diameter (with a 3/4" X 2" long ribbed shank), or a US Army Corps of Engineers Type C Disc with a 3 1/2" top diameter.
  - There will be no separate measurement or payment made for survey markers. All costs for this work shall be incidental to the other contract items.

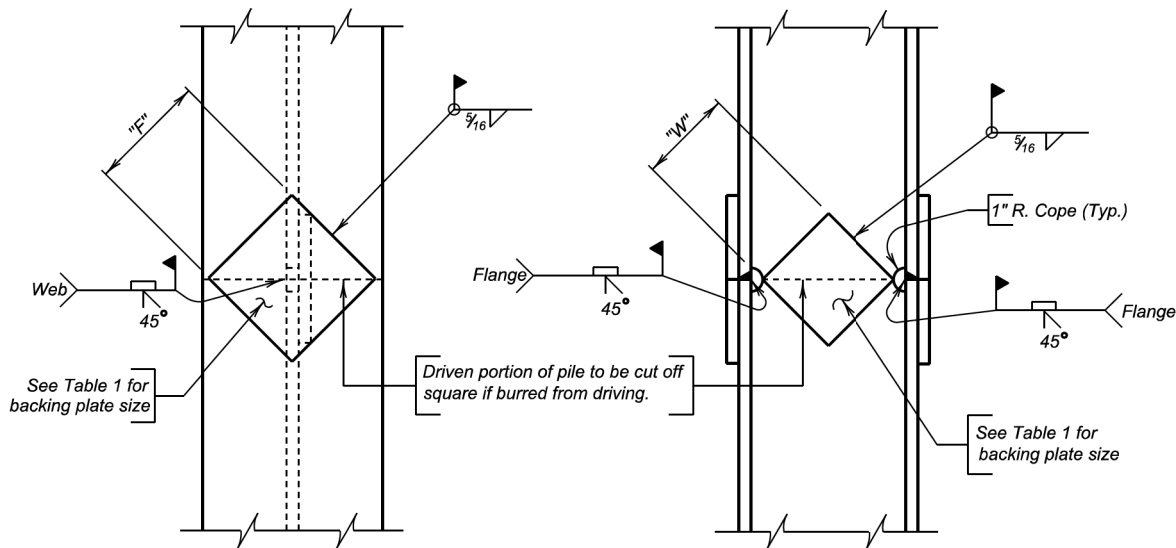
June 26, 2012

Published Date: 1st Qtr. 2019	S D D O T	BRIDGE SURVEY MARKER	PLATE NUMBER
			460.05
			Sheet 1 of 1

REQUIRED LIST

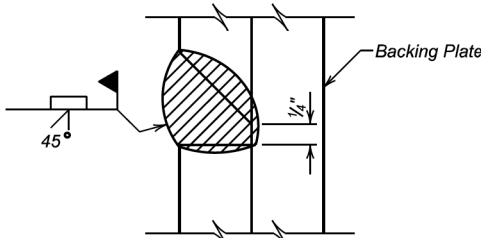
- ① Title Block    ③ Insert Required Standard Plate Sheets as Needed  
② Project Block

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.			



NOTE:  
Prepare joint surfaces lower end of upper section on the ground and weld on backing plates; then place upper section on lower section and weld.

COMPLETE JOINT PENETRATION WELD DETAIL



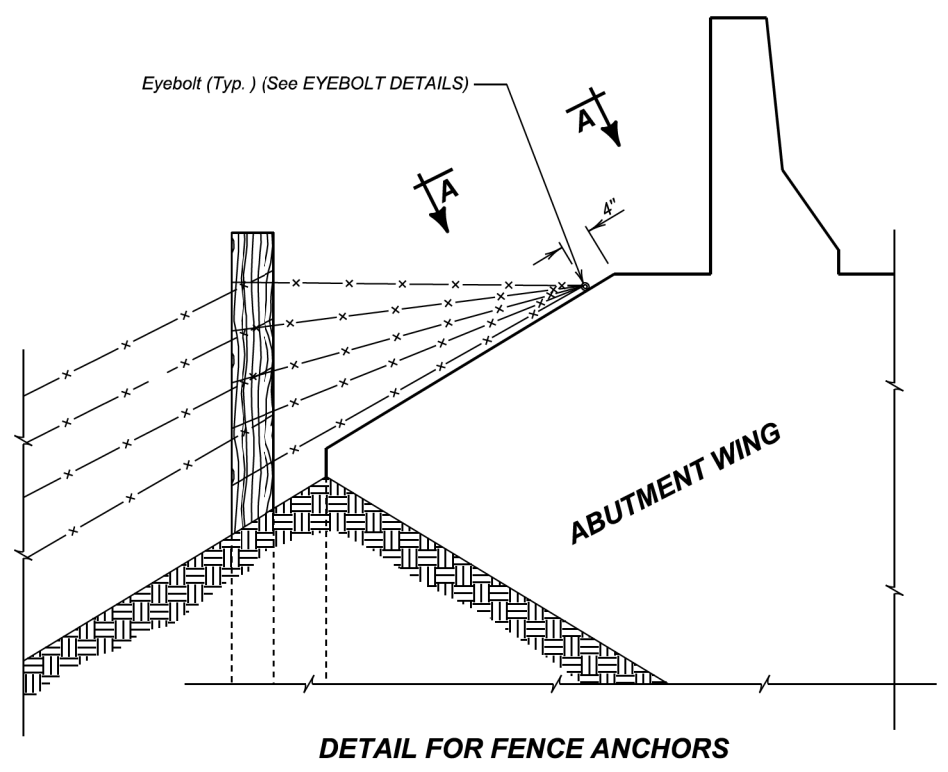
- GENERAL NOTES:**
- Steel for backing plates shall conform to ASTM A709 Grade 50.
  - Welding and weld inspection shall be in conformance with AWS D1.5 (Current Year) Bridge Welding Code - Steel.
  - Welder must be certified and registered with the SDDOT.
  - Backing plate shall at a minimum be as thick as the web of the pile being spliced.
  - Web must be coped with 1 inch radius.
  - Submit Welding Procedure Specification (WPS) to Bridge Construction Engineer for approval prior to pile driving.

TABLE 1 (BACKING PLATES)			
PILE	10"	12"	14"
"F" FLANGE	6 1/2"	8"	10"
"W" WEB	4 3/4"	6 1/4"	7 1/2"

December 23, 2012

Published Date: 1st Qtr. 2019	S D D O T	STEEL PILE SPLICE DETAILS	PLATE NUMBER
			510.40
			Sheet 1 of 1

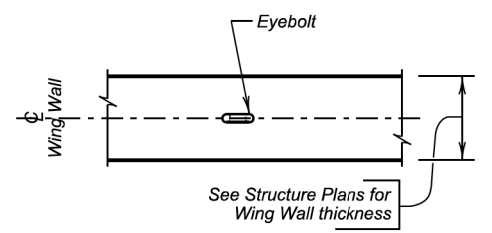
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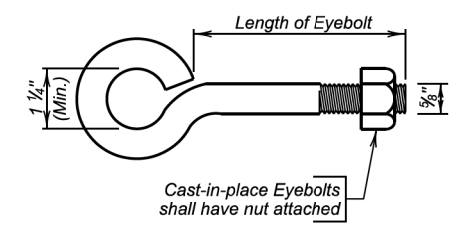
DETAIL FOR FENCE ANCHORS

GENERAL NOTES:

1. The fence and post details shown are for illustrative purpose only. The fence shall be as specified elsewhere in the plans.
2. Eyebolts shall be placed on all of the bridge abutment wings.
3. Eyebolts shall be  $\frac{5}{8}$  inch diameter and shall conform to ASTM A307.
4. Eyebolts, nuts, and concrete inserts shall be galvanized in accordance with AASHTO M232 (ASTM A153). Concrete inserts of corrosion resistant material need not be galvanized.
5. Cast-in-place eyebolts shall have a nut attached, be 4  $\frac{1}{2}$  inches (Min.) in length and shall be embedded such that the eye of the bolt is flush with the concrete surface. (See Eyebolt Details) As an alternate, cast-in-place concrete inserts, capable of developing the full strength of the  $\frac{5}{8}$  inch diameter threaded eyebolt, may be used and shall be set in the concrete in accordance with the manufacturer's recommendations. The eyebolt shall be of sufficient length to develop its full strength. The eye of the eyebolt shall be flush with the concrete surface.
6. The cost for furnishing and installing eyebolts and/or concrete inserts shall be incidental to various contract items.



VIEW A - A

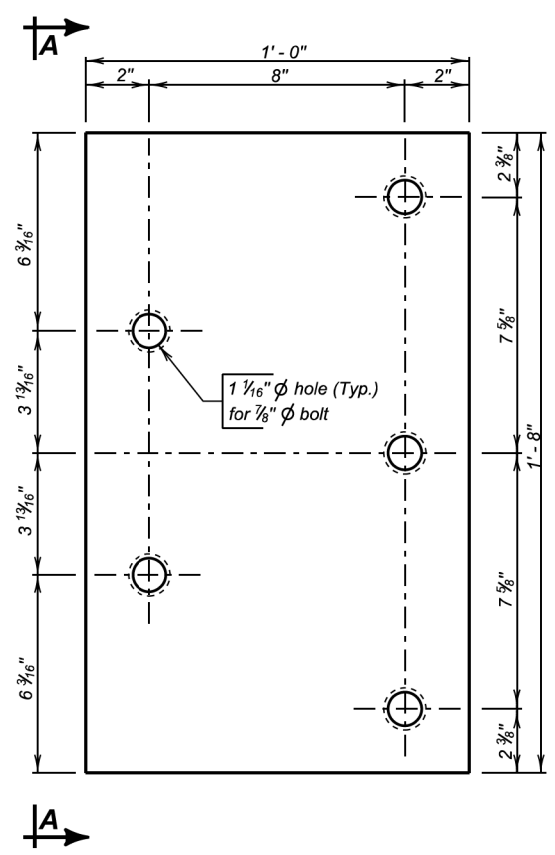


EYEBOLT DETAILS

December 23, 2012

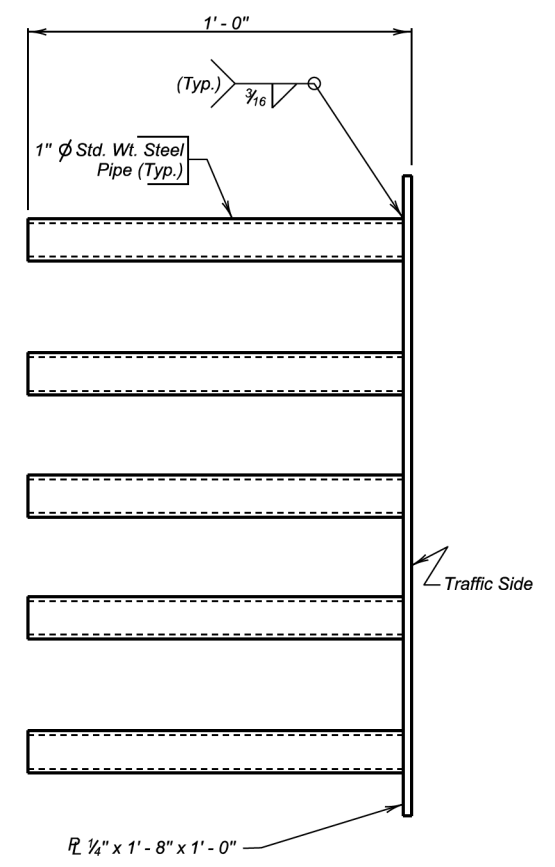
Published Date: 1st Qtr. 2019	S D D O T	FENCE ANCHORS FOR BRIDGE ABUTMENT WINGS (WINGS 6' AND SHORTER)	PLATE NUMBER 620.18
			Sheet 1 of 1

3



ELEVATION

2



VIEW A - A

GENERAL NOTES:

1. Steel plate for the insert assembly shall conform to ASTM A709 Grade 36. The steel pipes shall conform to ASTM A53 or ASTM A500 Grade B.
2. Welding and weld inspection shall be in conformance with AWS D1.1 - (Current Year) Structural Welding Code - Steel.
3. After fabrication, galvanize in accordance with AASHTO M111 (ASTM A123).
4. Bolts, nuts, and washers shall be provided with each assembly. Bolts shall be galvanized and conform to the requirements of ASTM A307, A325, or A449. Plain washers shall be galvanized and conform to ASTM F844.
5. Bolt heads shall be placed on the traffic side of the endblock. Bolt projection at the back side of the insert shall not exceed 1 inch beyond the nut.
6. The cost of the 5 bolt insert plate assembly complete in place including welding and galvanizing shall be incidental to the contract unit price per Cubic Yard for "Class A45 Concrete, Miscellaneous ", "Class A45 Concrete, Bridge Deck ", or "Class A45 Concrete, Bridge Repair ", as applicable.

December 23, 2013

Published Date: 1st Qtr. 2019	S D D O T	5 BOLT INSERT PLATE ASSEMBLY	PLATE NUMBER 630.92
			Sheet 1 of 1

REQUIRED LIST

- 1 Title Block
- 2 Project Block
- 3 Insert Required Standard Plate Sheets as Needed

1

119' - 0  $\frac{7}{8}$ " CONT. CONCRETE BRIDGE  
STR. NO. 63-179-170  
MARCH 2017